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TOO FAR, TOO FAST?

EVEN the world's favourite time-traveller, Dr Who, would be dizzy if he ventured too far inside this issue of Race Tech.

From Aston Martin's new Valkyrie, evoking the spirit of Le Mans 1959, to Lewis Hamilton's chances of helping the Prancing Horse secure success that has eluded it since 2008, and to Lancia's return to the World Rally Championship for the first time since 1992, there is a common thread in our features.

The marketing departments want us to wallow in glorious nostalgia – and it *does* feel good! – but the engineers at the forefront of all three projects are fully focused on looking at the challenges ahead.

That forward vision is the secret of many great motor racing organisations. So it was quite shocking last month to hear an energy giant that has also been surging ahead, looking to the energy transition that affects us all, say 'enough'!

BP's chief executive said the company's faith in the green energy transition was "misplaced" and that BP went "too far, too fast" in recent years.

Instead, the company is dropping green goals, slashing spending on low-carbon energy and ramping up oil and gas production. It will increase its target for oil and gas production by 2030 to the equivalent of about 2.4m barrels a day – about 60% higher than the figure in its net zero plan set out five years ago.

Those "too far, too fast" comments set me thinking about motorsport. Not least because BP is due to enter Formula 1 next season with Audi, collaborating on the development of FIA-specified Advanced Sustainable Fuel.

My conclusion was that motorsport has been remarkably canny in the way that it has tackled the energy transition. Yes, on occasions, it has probably gone too far, too fast, carried away by its enthusiasm. The World Rally Championship was the first to embrace sustainable fuel, but did it rush too quickly into a hybrid system that was too costly and so timid that it was guilty of only paying lip-service to the true intent of the technology?

The British Touring Car Championship, like the WRC, has also abandoned hybrids for now. It cites developments in sustainable fuel as the catalyst for its U-turn. Sorry, not allowed to mention that word!

The championships that have gone out on a limb in pursuit of a technical nirvana, have also tempered their ambitions with a degree of pragmatism.

Formula E raced ahead with its technology, but it has always been careful which parts of the package it allowed teams and manufacturers freedom to play with. It also introduced cost caps, as did Formula 1.

F1 might have been lured into a knee-jerk reaction by the success of its all-electric rival and the temporary exodus of some of its manufacturers. Instead, it has taken its time to introduce its new regulations, shaping its future around the sustainable fuels that attracted BP, Honda, Audi, Ford and Cadillac.

The Automobile Club de l'Ouest and the FIA, joint architects of the World Endurance Championship's new golden era, have aimed high with plans for the introduction of hydrogen. But they have also exercised caution and sensibly extended the lifespan of the current regulations as a backstop.

The sport's reaction to the energy transition, be it good, bad or downright ugly, is sure to be a big theme at this year's World Motorsport Symposium, booked for November 17 and 18 in London, at the prestigious Royal Automobile Club. Perhaps BP will join us there? RT

Mark Skewis
EDITOR

NASCAR 'HOPES FOR THE BEST, PLANS FOR THE WORST' WITH EV SHOWCASE

Muscle man, but not muscle car: world's toughest ex-cop quells unrest as EVs hit Daytona! By **Mark Skewis**

THE build-up to this year's Daytona 500 was an uncomfortable one for NASCAR's traditional fanbase, with both Chevrolet and Ford releasing their own versions of NASCAR's EV prototype.

Both cars are built on NASCAR's Next Gen chassis and suspension componentry, with a 78-kWh liquid-cooled battery. They deliver in the region of 1,300 horsepower from three six-phase electric motors.

To compound traditionalists' misery, the event featured the first EV pace car in the race's history: a Chevrolet Blazer EV SS.

It prompted a predictable reaction, with fans taking to social media to vent their frustration at the perceived abandonment of V8 values: "Corporate nonsense"; "Who asked for this? We don't want EVs in NASCAR"; "Woke electric crap"; "Why? Just WHY?"; and "They're ripping the soul out of NASCAR" all featured. There were more, but you get the gist.

They were happier about the honorary pace car driver – Alan Ritchson, the star of the Amazon Prime Video show 'Reacher' – than they were about the car itself. Being Reacher, one can only presume that he hoped for the best but planned for the worst!

Blazer EV.R

Chevrolet, like NASCAR itself, has been careful in its approach to testing reaction to the EV revolution.

The Blazer EV.R – Chevrolet's own take on the EV prototype NASCAR showed in Chicago last year – is an example of Chevrolet continuing to test, learn, and explore new technologies that could be applied to both race programs and production cars.

"While we will continue to race our proven and winning V8 technology in NASCAR for years to come, we continually look for ways to improve the combination of power, durability, and efficiency to transfer learnings from the racetrack to the showroom, especially as we bolster Chevy's consumer EV lineup," said Eric Warren, executive director, global motorsports competition for General Motors.

Chevrolet's commitment to offering its customers a choice – it offers diesel, gasoline, and BEVs – is one of the keys to its success.

"Motorsports is a test bed for innovation, and a training ground for our engineers – one that allows Chevrolet to try out new technologies in a fast-paced environment against the best competition," Warren added.

The Blazer EV.R transmits its power

LEFT Chevrolet revealed its Blazer EV.R NASCAR prototype at Daytona

through a programable all-wheel drive system and Goodyear Racing Eagle tyres. GM Design worked together with motorsports engineers to give the Blazer EV.R styling features inspired by the Blazer EV SS production vehicle.

"This program was a great opportunity with NASCAR to design a new crossover utility vehicle body and bring forward design elements from our Blazer EV SS," said Phil Zak, executive director, Chevrolet Global Design. "The EV.R prototype offers lower and wider proportions and was designed with aerodynamics and performance in mind."

"NASCAR and its manufacturer partners are passionate about emerging technologies, and working to remain on the forefront of innovation," said Brandon Thomas, NASCAR vice president, vehicle design. "With the Blazer EV.R NASCAR prototype, Chevrolet and its engineers meshed new technologies with the NASCAR Next Gen platform – and the result is a powerful, exciting vehicle that we believe fans will love when they see it."

Like NASCAR's own EV prototype, developed with ABB, the Chevy has already lapped a racetrack, testing at Carolina Motorsports Park in Kershaw, South Carolina. The car was driven by Justin Allgaier, Team Chevy driver, 2024 NASCAR Xfinity Series Champion.

"There are so many things you don't think about until you're in the car actually testing it," said Allgaier. "I'm used to knowing my speed through gearing and listening to engine revs, so I had to totally change how I judge corner entry speed. With this platform we're learning how to strategically adjust regenerative braking, which has a big impact on braking sections and cornering balance."

Getting the right balance is also the mission of NASCAR and its manufacturers as they test reaction with such projects. The OEMs have, after all, invested heavily in EVs.

At the same time, NASCAR would like to capture a new generation of fans – who might be the target audience for the EVs of the future – but without alienating the existing fanbase.

The sanctioning body is also wary after having been tugged first down the hybrid route, then into a full EV, with manufacturers themselves not knowing with certainty which direction they want to follow.

"NASCAR is always changing. NASCAR is competition, innovation, and new audiences," said President Steve Phelps.

Phelps also noted that progress doesn't mean forgetting the past.

"It doesn't mean we forget how we started. It does mean we grow with the times," he said. RT

Ford's NASCAR EV in Race to the Clouds

FORD'S Mustang Mach-E NASCAR prototype, also unveiled in the run up to Daytona, is destined to compete in this year's Pikes Peak Hillclimb.

Like the Chevy, the Mach-E demonstrator features components from the current Cup Series car including suspension, brakes, steering and wheels. It also features three motors, a full carbon fibre tub, and a 78-kWh battery.

Unlike the NASCAR EV prototype, which remains a developmental showcase, Ford has confirmed it will return to the Race to the Clouds in 2025 with an electrified Mustang Mach-E demonstrator. This follows last year's F-150 Lightning SuperTruck and SuperVan 4.2 before it – both tackling the event with over 1,600 bhp.

Behind the wheel will be Romain Dumas, the reigning "King of the Mountain" and outright Pikes Peak record holder in Volkswagen's I.D. R. With Dumas involved, expectations are high – though any Pikes Peak entry will undoubtedly feature far wilder aero than the NASCAR-spec machine demonstrated so far. RT

BELOW Ford's Mach-E demonstrator will contest Pikes Peak

IndyCar replaces president as it looks to new era

THE IndyCar paddock was rocked, if not completely shocked, when Penske Entertainment replaced IndyCar President Jay Frye just weeks before the opening race of the season.

Frye has been succeeded by Indianapolis Motor Speedway president Doug Boles, who will also continue in that role.

No reason was given for the move, though no 'by mutual consent' platitudes were issued when the news broke.

"Exactly how things unfolded with Jay is not a matter that I'm going to get into," said Penske Entertainment President & CEO Mark Miles when asked specifically why Frye had been 'fired'.

Frye departs the organization following 10 years in the role. During Frye's tenure, IndyCar struck title sponsorship deals with Verizon and NTT, implemented the cockpit aeroscreen and introduced hybrid technology. The latter project illustrated the remarkable level of collaboration between on-track rivals Chevrolet and Honda, with the former developing the MGU and the latter focusing on the Energy Storage System. But it also highlighted the heavy burden the two manufacturers currently shoulder without a third OEM to share the costs of supplying engines for the series.

The series also finds itself at a crossroads as it ponders the replacement of a chassis that is now 13 years-old and introduces a new engine package for 2027 or 2028.

"It has been an absolute honour and privilege to be the President of IndyCar and work alongside the dedicated and talented men and women at IndyCar and in the IndyCar paddock," Frye said. "The growth and success the series has had over the last 10 years would not be possible without the commitment and collaboration of the owners, drivers and teams."

"Jay focused more on competition and operations, and that's on the track, and I think less on the other commercial aspects of the sport, and IndyCar," explained Miles of the changeover. "Doug is, I think, incredibly well suited to work on both. I haven't thought about it in sort of comparative terms, but I know he [Boles] can punch his weight class on both, making sure we're in good shape for the racing as well as the commercial side."

Boles brings decades of motorsport experience to his new responsibilities, including being the President of Indianapolis Motor Speedway since 2013. At IMS, he oversaw the sellout of the 100th Indianapolis 500, the first full-capacity crowd in the event's storied history. In addition, he's managed more than $150 million in strategic investment at the Racing Capital of the World, including "Project 100" and significant infrastructure improvements following the acquisition of IMS by Penske Corp.

Across his tenure at IMS, he has been particularly lauded for his promotional prowess and strategic marketing capabilities, growing the Speedway's global reach. He has also worked extensively within the IndyCar paddock as a founding partner and Chief Operating Officer at Panther Racing and as Hulman & Company's Vice President of Communications.

"Racing is in my DNA, and no form of racing resonates more personally and strongly with me than the NTT IndyCar Series," Boles said. "I'm honoured to lead the amazing team at IndyCar, and I truly believe the future is bigger and brighter than ever for our sport and the Indianapolis Motor Speedway. I'm extremely grateful to Mark Miles for this opportunity, and fans can rest assured the hard work is already underway and 2025 will be a fantastic season."

Boles' appointment will forge closer links between IMS and the IndyCar Series. "The Indy 500 doesn't work without a really healthy IndyCar Series and the IndyCar Series doesn't work without the Indianapolis 500, so weaving those two things together is one of the strengths that we'll have, because the success of both is interdependent," he said.

As Boles manages strategic vision and priorities across both IndyCar and IMS, several additional staffing updates will help oversee day-to-day operations within each organization.

Penske has promoted Mark Sibla to Sr. VP of competition and operations, which is expected to include oversight of the new car. Race director Kyle Novak has been elevated to IndyCar's VP of officiating and race control, which includes leading the technical inspection team. Penske communications VP Alex Damron is IndyCar's new chief marketing officer, and Louis Kissinger has been promoted to IMS operations GM. RT

Penske Entertainment/Chris Jones

ABOVE Boles will dovetail the roles of president of IMS and IndyCar

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Williams secures 'huge' deal with software company

WILLIAMS has secured a new title partnership deal with software company Atlassian that it describes as "the biggest partnership deal in Williams' 48-year history".

Atlassian is an Australian software company that has a base in the United States, and reported revenue of $4.4 billion for the 2024 fiscal year. Its clients include the likes of NASA, BMW, Kiva, Deutsche Bank and Dropbox.

With Artificial Intelligence increasingly a vital part of a team's technical armoury, the deal reflects the emerging trend of F1 squads partnering with tech giants. It will see the team become Atlassian Williams Racing, with Williams saying the size of the deal reflects its historical standing within the sport.

Team principal James Vowles, a figure well aware of the need to harness AI as F1 tackles anew set of regulations for 2026, commented: "Attracting a title partnership of this size and significance is a momentous day in our team's illustrious history and a major milestone in our comeback transformation.

"We are putting in place all the right ingredients to get this team back to the front of the grid, and in Atlassian we have a partner that through its technology and tools will help unleash our full potential by improving teamwork and collaboration right across the organization. Our values and ambition align perfectly, and I'm excited about what we can achieve together."

Atlassian CEO Mike Cannon-Brookes said there was an obvious synergy between his company and F1, with Williams set to leverage Atlassian's AI capabilities moving forward.

"Formula 1 is the ultimate team sport," Cannon-Brookes said. "It's where engineers, developers, commercial teams, pit crews and countless others work together in real-time at incredible speeds to race for a podium finish. Atlassian shares Williams' deep belief in the power of teamwork. We know that when great teams have the right tools and practices, they can achieve things that would be impossible alone.

"As one of the first global technology companies out of Australia, we understand what it's like to have passion, drive and the belief that you're building something great. This team has been through a remarkable transformation, and I believe Atlassian Williams Racing has all the foundations for a renewed era of greatness." RT

BELOW Williams has new title sponsorship for its FW47

FIA clampdown on flexi-wings

FORMULA 1's governing body is introducing new load tests this season as the latest move in the eternal battle to control the aero elastic behaviour of teams' front and rear wings.

The scope of rear wing tests will be increased from the start of the campaign in Australia. Additional front wing tests will come into force from the Spanish Grand Prix on June 1.

"Following further analysis carried out by the FIA single seater department after the conclusion of the 2024 season, we are committed to ensure that bodywork flexibility is no longer a point of contention for the 2025 season," the FIA said.

The governing body said the phased approach was to allow teams to adapt without the need to discard existing components unnecessarily.

"These adjustments are aimed at further refining our ability to monitor and enforce bodywork flexibility regulations, ensuring a level playing field for all competitors to promote fair and exciting racing," it added.

Reigning world champion McLaren Racing upped its game considerably last season with the aero-elastic behaviour of its aerodynamics. It did modify its rear wing, after the race in Singapore, but it also reaped benefits throughout the season of improving in an area that has for years been dominated by Reed Bull.

The issue prompted a number of disputes between the two rivals throughout the 2024 campaign. RT

• The Formula 1 Commission has agreed to a proposal to increase the mandatory number of pit stops at the Monaco Grand Prix to improve the racing spectacle.

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Solid-state batteries move a step closer

ABOVE & BELOW F1 and passenger car engineers teamed up for the project

MERCEDES-BENZ engineers from the road and racetrack worked in collaboration with Factorial cell engineers to deliver an all-new solid-state battery test program, resulting in the first car powered by a lithium-metal solid-state battery on the road.

Mercedes AMG High Performance Powertrains (HPP), a wholly owned subsidiary of Mercedes-Benz Group specializing in Formula 1 technologies, and the Mercedes-Benz Center of Competence for Battery Systems designed and developed a completely new innovative battery system. In addition to its prowess on the racetrack, HPP is capable of rapidly transferring F1 technologies and expertise into high performance automotive projects.

After intensive testing on various test benches, the prototype solid-state battery was integrated into a Mercedes-Benz EQS Sedan at the end of 2024. The vehicle was slightly modified to fit the solid-state battery and equipped with all accessories to operate it. The first laboratory vehicle tests were conducted in Stuttgart at the end of 2024 to prepare for the road tests that started in February 2025.

"Developing an automotive-scale solid-state battery underlines our commitment to innovation and sustainability," said Markus Schäfer, Member of the Board of Management of Mercedes-Benz Group AG, Chief Technology Officer, Development & Procurement. "We're therefore excited to announce that we've started road testing with a prototype vehicle equipped with this advanced technology. We will gain crucial insights into possible series integration of this cutting-edge battery technology."

Solid-state batteries are a promising technology in electric mobility. The use of a solid electrolyte instead of liquid enhances cell safety and allows for the use of new anodes like lithium-metal, significantly outperforming conventional lithium-ion cells and enabling next-level energy densities. The solid-state technology reduces battery weight and has the potential to increase the gravimetric energy density for vehicle batteries up to 450 Wh/kg at the cell level, thereby increasing electric range.

"Being the first to successfully integrate lithium-metal solid-state batteries into a production vehicle platform marks a historic achievement in electric mobility. This breakthrough demonstrates that solid-state battery technology has moved beyond the laboratory and into real-world application, setting a new benchmark for the entire automotive industry. Our collaboration with Mercedes-Benz proves that the future of electric vehicles is not just a vision, but a reality we're delivering today," commented Siyu Huang, CEO and Co-Founder of Factorial Energy.

The solid-state battery from Mercedes-Benz features an innovative floating cell carrier, for which a patent has already been granted.

The solid-state battery in the EQS-based test vehicle allows for up to 25 percent more electric range compared to the same battery weight and size of a corresponding standard EQS battery. RT

Hexagon is an innovation partner for the RB21

SWEDISH manufacturing technology company Hexagon has extended its long-term partnership with the Oracle Red Bull Racing F1 team.

The new multi-season deal builds on an 18-year-long relationship in which Hexagon, the team's exclusive metrology partner, has supplied Red Bull with 3D scanners and digitalization capabilities.

With over 20,000 design changes each season, Hexagon has enabled Red Bull to seamlessly integrate quality inspection and digitalisation into its engineering processes.

The team says it has reduced faults by 50% over the past two years with the support of Hexagon's ultra-fast scanning technologies that guarantee every component is manufactured to the required accuracy and quality as the car is reassembled for each race.

Hexagon's digital twin technologies will be leveraged as the focus switches to the demands of a complete rules overhaul for the 2026 season.

Christian Horner, CEO and Team Principal of Oracle Red Bull Racing, said: "Hexagon has played a vital role in the success we've achieved over a long period. Our technology partners are a crucial element for us and we're very selective about who we work with. Hexagon will ensure our competitiveness for years to come."

Josh Weiss, president of Hexagon's Manufacturing Intelligence division, commented: "Sharing a legacy of entrepreneurial spirit, innovation, and excellence, we're excited to face the challenges of the upcoming season and embrace an even greener, more exhilarating era in 2026 and beyond."

Hexagon will also expand its partnership through Oracle Red Bull Sim Racing, inspiring the next generation of STEM professionals with a focus on the engineering sector and bridging the gap between sim racing and F1. RT

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Audi heads for Motorsport Valley

JUST a year before it hits the Formula 1 grid, Audi has finally bowed to what most industry experts had long believed was inevitable: it is to create an engineering base in the UK's Motorsport Valley.

Of the current teams, only Ferrari has no presence in the UK, though it has sufficient appeal to lure expertise to its Maranello HQ. By contrast, Sauber – which Audi is acquiring in order to enter F1 – has traditionally struggled to attract, then keep, top personnel.

Switzerland has tried hard to develop a motorsport hub, with notable successes like sustainability trailblazer Bcomp, but the high cost of living has made it hard for engineers to relocate their families from the UK.

Of those outfits that are based outside the UK, even the likes of Red Bull's junior squad (Faenza-based Racing Bulls) have adopted satellite facilities in England. F1's newest team, US powerhouse Andretti-Cadillac, has been working for more than a year on its new car from a tech base at Silverstone.

Now Sauber is following suit. The Sauber Motorsport Technology Centre UK will be a smaller third site for the team, in addition to its aerodynamic headquarters in Hinwil, Switzerland and the Audi engine base in Neuberg, Germany.

Sauber said the new facility will "extend the team's presence and influence within the global Formula 1 landscape" as it will give access "to the world's largest motorsport expertise and talent pool".

Sauber believes this initiative "is a key component of the Audi F1 project's long-term strategy to enhance and expand its technical capabilities".

"Expanding into the UK allows us to remain close to one of the world's most dynamic motorsport ecosystems," said Sauber Motorsport COO and CTO Mattia Binotto. "Our vision is to create a strong, collaborative network across Hinwil and the UK, driving innovation and performance."

ABOVE The four rings are heading for the UK

Silverstone, Bicester and Milton Keynes are all under consideration as possible sites for the UK technical centre. It is expected to be operational by Summer 2025.

Audi has for some time been aware of how much work is required before it can fulfil its ambition of competing at the front. It has already experienced one huge management reshuffle, and last year the incoming Binotto likened Audi's task in winning in F1 to climbing Mount Everest.

As if to underline the magnitude of that mission, Sauber promptly finished 2024 last in the constructors' championship. RT

The case for a UK base

NOT since Ferrari's 2008 Constructors' title has a team based outside of the UK tasted success. Audi's critics have long urged it to recruit in the UK, with former Jordan boss Eddie Jordan explaining why in his podcast 'Formula For Success'.

"To build a car, to run it out of Switzerland, it's a big, big, big ask," said Jordan. "When did you last see a Swiss or a German [based] team win a world title?

"There is no better way to run a racecar than through Britain and particularly in that area of Northampton, Oxfordshire. They've just got such a wealth of knowledge and the suppliers in the region understand the complexities and the timeframes that people are on there.

"You order a piece of machinery to be done in Switzerland, they will give you a timeline of maybe needing four days, four weeks, four months and there's nothing you can do. Whereas if you're in the UK, you would just sit on top of that supplier and say, 'If you don't do this, you just don't get any more work. So you better drop everything and do it.' And they work night and day to get it done. It's the mindset, the racing culture, it's in the DNA." RT

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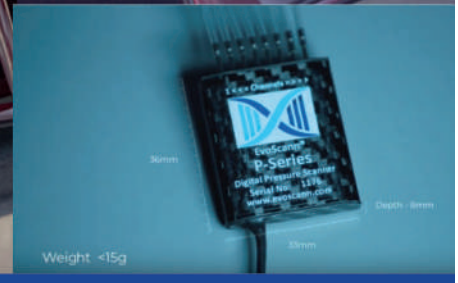

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Peugeot and Capgemini to unleash AI on sustainability challenge

PEUGEOT Sport has renewed its partnership with data and Artificial Intelligence expert Capgemini , targeting both on-track performance and off-track sustainability.

The French manufacturer is seeking to further the development of its 9X8 in the FIA World Endurance Championship. At the same time, it is stepping up efforts to improve its carbon footprint.

Over the past two years, Capgemini teams have built a powerful data engineering platform to analyse information from both real and simulated races, as well as associated parameters (driver, circuit, race conditions, etc). The AI model powering the virtual sensors is tailored, compiled, and embedded in the 9X8's onboard computer to enhance decision-making and adjust the Hypercar's behaviour in real-time. Racing engineers have also significantly reduced the time required for processing and analysis – tasks that previously took a full day can now be completed in just 10 minutes.

The next step involves leveraging generative AI to analyse temporal sensor data to identify anomalies during the extended durations of tests or races. Generative AI is also being used to capture and structure the exchanges and interactions between drivers and race engineers, which, in the endurance championship context, can last several hours. These new insights are then correlated with race data to extract valuable information aimed at optimizing the Hypercar's performance.

Since 2022, Capgemini has been supporting Peugeot Sport, and more broadly Stellantis Motorsport, in its comprehensive decarbonization initiative.

The first step involved calculating the carbon footprint of the entire motorsport ecosystem: from vehicles on the track to parts and team logistics, as well as the organization of sporting events. Subsequently, around 30 concrete actions were identified to reduce greenhouse gas emissions by 2030, with annual assessments and adjustments as needed. After several theoretical phases, practical implementation is now underway, with emissions calculations updated annually.

Examples of initiatives implemented in addition to FIA WEC's measures include: R&D teams adopting an eco-design approach for vehicles, incorporating environmental considerations during parts development processes and using alternative materials; Climate Awareness workshops; optimised travel arrangements, with a preference for maritime freight; and renewable biofuel tanks (HVO-100) for the entire fleet of trucks and diesel utility vehicles, reducing greenhouse gas emissions by more than 85% compared to fossil fuels.

"Today, AI has become a key element of our racing strategy, confirmed by improved results at the end of the 2024 season, particularly at Fuji and Bahrain," said Jean-Marc Finot, Senior VP of Stellantis Motorsport. "Beyond the sporting events, we play a pioneering role in sustainability by developing tomorrow's technologies.

"Thanks to our partnership with Capgemini, we closely monitor the key decarbonization indicators to ensure we stay on track with the ambitious goals we have set for 2030. Together, we are tackling a dual challenge: sports and sustainable performance."

"We are delighted to continue our collaboration to enhance Peugeot Sport's performance, both in terms of sporting results and the environmental impact of motorsport, by providing the latest AI technologies and our expertise in decarbonization," said Andrea Falleni, CEO of Capgemini Southern Europe and Member of the Group Executive Committee.

The Capgemini group reported 2023 global revenues of €22.5 billion. RT

BELOW AI is being leveraged by Team Peugeot TotalEnergies to develop its 9X8

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Formula E passes first fast-charging test

FORMULA E's new Pit Boost fast-charge pitstop gambit passed its first examination in Jeddah, where it was deployed in one of the double-header races.

Developed by Fortescue Zero, the fast-charge function gives each car a 10% energy increase (3.85 kWh) through a 30-second, 600 kW boost in the pit lane. In Jeddah the 34-second stops – 30 seconds of charging, with 34 seconds total mandatory stationary time – were taken as batteries entered a window of 60-40 percent state of charge.

In spite of a degree of trepidation down the pit lane that any tech hitch could ruin a driver's race, the cars suffered no obvious malfunctions.

"When it was conceived as an idea, the vision was two things," Formula E CEO Jeff Dodds said of the concept. "The first was how do we extend the race or allow the cars to use more power during the race? How can we achieve that? The second thing being how do we showcase the advancement of technology in the electric vehicle space?

"So, how do we show people who are worried about buying EVs and it taking forever to charge them, they'll be able to charge them very quickly in the future?"

The end result in Saudi Arabia was a race fought to the end in typical Formula E fashion, without the tense "peloton"-style energy saving that has featured throughout the Gen3 era.

"It just shows Formula E's progress in terms of technology, that in 30 seconds you can charge the car 10 per cent, which is actually incredible," said Jeddah race winner Maximilian Guenther. "It brings another element of excitement for the fans, for us in the car, for the engineers and the teams in the garage. I really think it's a great addition to the championship." RT

RIGHT Pit Boost was conceived to showcase fast-charging

Formula E on the attack with viewing figures

FORMULA E has reported record-breaking viewing figures for the opening races of its 11th season.

The 2025 Hankook Mexico City E-Prix delivered a cumulative audience of 10.5 million on CBS, surpassing all but one F1 race for a US broadcast audience in the last two seasons.

Formula E said the cumulative audience in the US was 80% larger than the 2024 Las Vegas GP, and the highest of a single programme in the history of the all-electric series.

The claim is as revealing as it is bold, for rather like a puppy chasing the older dog with which it co-habits, Formula E continues to use the more-established single-seater series as its yardstick. Furthermore, the claim conveniently overlooks the fact that the two championships use a different method of arriving at their viewing figures.

LEFT The Mexico E-Prix broke viewing records

Nevertheless, it indicates that where F1's figures might have plateaued after its 'breakthrough' season in the US – 1.13 million viewers watched the American races on average last year, a 3% decrease from 2023 – Formula E is still on the rise.

In total, the opening round in Brazil recorded a cumulative audience of 40 million viewers, making it the most-viewed opening round and one of the most-watched races in the series' 11-season history.

In the UK, the São Paulo clash saw a 120% increase in like-for-like viewership against the same race in Season 10, thanks to a new free-to-air broadcast deal with ITV.

The overall viewership of the 2025 Hankook Mexico E-Prix from within Mexico also grew by 10% year-on-year, while viewership within Germany and France surged 65% and 64% respectively, showing signs of a growing fanbase across Europe. RT

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Ford to "go like hell" for Le Mans victory

IT'S a case of 'Ford v Ferrari: The Sequel' after the Blue Oval confirmed its intention to return to the pinnacle of endurance racing after an absence of nearly six decades.

For the first time since their epic Sixties battle, Ford will find itself confronted by Ferrari – the reigning Le Mans champions – in a fight for outright victory in the 24-hour classic. Indeed, Ford's announcement of its LMDh-based campaign referenced the blockbuster, Academy Award-winning movie inspired by that 1966 duel, with chairman Bill Ford saying: "We are ready to once again challenge the world, and 'go like hell!'!"

ABOVE Ford followed its class win at Daytona with the announcement of its return to Le Mans

The Dearborn-based automaker will enter the World Endurance Championship in 2027 with a full factory LMDh Hypercar team taking on Ferrari, Porsche Penske, Cadillac and Toyota.

"We are entering a new era for performance and racing at Ford," said Ford. "You can see it from what we're doing on-road and off-road. When we race, we race to win. And there is no track or race that means more to our history than Le Mans."

Which is quite an admission. Especially in the year that Ford is gearing up to return to F1, has won its class in the Rolex 24 At Daytona with the GT3 Mustang, and has finished on the podium with the Raptor at the Dakar Rally.

Ford's announcement was welcomed throughout the racing world.

"It is wonderful news to welcome Ford back to the top level of the 24 Hours of Le Mans for the first time in almost 60 years," said Pierre Fillon, president of the Automobile Club de l'Ouest, which oversees the Le Mans race. "It is a brand that has always had a close affinity with this very special race, and history shows that Ford does not compete to finish second. The renewal of its famous rivalry with Ferrari is truly an exciting prospect."

"(Ford's) return to the highest level of the discipline is further validation of the success and appeal of the current Hypercar regulations," said Richard Mille, president of the FIA Endurance Commission. "Endurance racing's golden age is right here, and right now!" RT

PHINIA to supply Alpenglow trailblazer

PHINIA, a global leader in premium fuel systems, electrical systems, and aftermarket products, is to support Alpine in the development of its Alpenglow hydrogen-powered prototype.

PHINIA has supplied its innovative DI-CHG direct hydrogen injectors and associated driver technology to the Alpenglow. The injectors are an essential part of the car's hydrogen combustion system, offering precise fuel delivery, multiple injection capabilities, and compatibility with both compressed natural gases (CNG) and hydrogen gases.

BELOW PHINIA's direct fuel injectors will power Alpine's Alpenglow Hy6

On the collaboration, Pierre-Jean Tardy, Chief Engineer, Hydrogen, at Alpine Racing, said: "We are thrilled to have PHINIA as our technical partner on this exciting journey into hydrogen mobility. Their expertise in fuel systems and advanced injector technology is critical to making Alpenglow a reality, and together we are pushing the boundaries of what's possible in motorsport."

First shown at the Paris Motor Show, the six-cylinder Alpenglow Hy6 follows last year's four-cylinder version, which flexed its muscles at Spa and Le Mans, with football legend Zinedine Zidane along for the ride.

PHINIA, under the Delphi brand, has also renewed its partnership with BWT Alpine Formula 1 Team, reinforcing its technical presence in global motorsports. RT

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"Each year, the World Motorsport Symposium brings together a distinguished group of racing experts, each of which is an impactful leader in their field. Their knowledge, insight and transparency on the critical challenges and vision of motorsport make this event essential for industry professionals."

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"The Automotive World is, with each passing year, more and more difficult to predict. The target is well known: Zero CO2; but the way to achieve it on a large scale is dramatically challenging. In such a period, the World Motorsport Symposium, being so open-minded, is very valuable to share and challenge ideas and solutions not just for motorsport, but for motorsport as a lab for future road mobility."

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WHAT THEY SAID...

DR VALERIA LORETI
Delivery Manager Motorsport, Fuels Technology Group, Shell Global Solutions (Deutschland) GmbH

"Participating in WMS 2024 was not only a great opportunity to hear directly from technical experts on a number of relevant and stimulating topics, but also the opportunity for networking and establishing those key relationships that are the basis for further development and exciting breakthrough steps."

DAVID SALTERS
President of Honda Racing Corporation USA (HRC US)

"I really appreciate the effort that goes into the Symposium, the straightforward open discussion, informed debate and reflection."

ERIC JACUZZI
Vice President, Vehicle Performance at NASCAR

"Another great learning experience for the two of us that attended from NASCAR. The topics were very relevant to the future of motorsport, and challenged us to look deeper into some areas of development that we had not previously considered or perhaps considered seriously enough. As always, the collegial atmosphere and lively debates and conversations make for a great event. I am looking forward to seeing everyone again next year and hearing about the advancements another year brings."

ULRICH BARETZKY
Former Director, Audi Motorsport Engine Development, Audi AG

"The 2024 WMS in the famous Royal Automobile Club was very special, a real highlight to mark the event's 20th anniversary. The quality of presentations, as well as the respective discussions in this very special atmosphere, really makes me look forward to the 2025 event."

ALAN PATTERSON
Founder, BeyondMath

"WMS is the one event that brings together all the leaders in motorsport under one roof. As a startup, this is invaluable for us."

SERGE GRISIN
Motorsport Director, Symbio

"I was truly impressed by the quality of the discussions, the insightful exchanges with leading experts in motorsport and technology, the spirit of openness and constructive dialogue, and the overall sense of shaping not only the future of motorsport but also, and more importantly, the future of mobility. A future that aspires to be more sustainable."

Can "champions of updates" be turned into champions of the world?

Andy Cowell reflects on his first 100 days as CEO of Aston Martin Aramco, revealing how he plans to make Lawrence Stroll's grand vision a reality

HE'S spent a career redefining F1 engine technology, and now he faces his biggest test: turning Aston Martin Aramco into a World Championship-winning team.

"This is the best job I've ever had," he insists.

"We're attempting something that's never been done before in the history of Aston Martin, and to achieve it is going to take all our ingenuity, guile and determination.

"Yes, it's going to be tough. Yes, it's a little bit daunting. But that's when things get exciting."

Clearly, heavy is *not* the head that wears the crown. Andy Cowell is bristling with excitement at the thought of taking Aston Martin to the pinnacle of Formula One.

One of F1's greatest engineers, he has moved engine technology to a whole new level over the course of a career consisting of spells at Cosworth, BMW, Ilmor and Mercedes – as Managing Director of Mercedes AMG HPP he spearheaded the development of the dominant hybrid power units that powered Mercedes to seven consecutive Drivers' and Constructors' World Championships.

But Cowell is more than just a brilliant engineer. An inspirational leader and skilled communicator, he's open, approachable and disarmingly down-to-earth.

In a far-reaching interview, he lifts the lid on his start to life at Aston Martin Aramco and what it's really like to be the CEO of a Formula One team.

You've spent several months in your role as CEO of a company that is on one of the most ambitious and exciting journeys in the history of Formula One. How are you feeling right now?

"Excited. I'm still as excited as I was on my first day with the team. It's a big responsibility, though. Aston Martin... is an iconic brand: a lot of history, a lot of investment and a fantastic group of partners that are as hungry for success as we are. I've been welcomed with open arms by everyone in the team, and the one thing everybody has in common is the will to win."

Arguably, no one is more determined to win than Executive Chairman Lawrence Stroll. You work closer with him than anyone else. What's he like as a boss?

"I've got to know Lawrence a lot better since I started; he's fiercely passionate about Aston Martin, about making his vision for the company a reality. His message is clear and I wouldn't want it any other way – you always know where you stand with Lawrence.

"Whatever Lawrence does in life, he wants to be successful at it. He wants to win. He's a serial winner. If you look at what Lawrence has achieved throughout his career, sooner or later success follows. That's not by coincidence. That's a product of his relentless drive to be the best.

"Lawrence is determined for Aston Martin to be successful in Formula One, but we're not just talking about winning races and the championship, we're talking about winning many championships."

And is it your responsibility to make Lawrence's vision for the team a reality?

"Building a World Championship-winning team is our North Star. Everything we discuss relates to what is needed to make this vision a reality.

"My job is to work out what organisation is the right one to achieve this vision: Have we got the right structure? Have we got the right people in the right places? Have we got the right infrastructure? Is everyone pulling in the same direction and working as one cohesive unit?

"I set out the overarching targets for the executive leadership team and work with them to establish the path to reach these targets that are aimed at getting ▶

ABOVE Cowell says the building of a title-winning team is the North Star the whole organisation follows

All photos: Aston Martin Aramco

us to where we want to be. And I make sure we're prioritising the right things and working on things in the right order.

"Lawrence has put a huge amount of trust in me to lead this team to the front of the grid. It's very humbling and it's a great privilege."

Is it daunting at all?

"Sure, but there's no point taking on a project that's easy and doesn't challenge you. If you do the same as what's gone before or the same as what others are doing, you'll never reach new heights, you'll never win.

"To be truly successful, to win, you have to come up with a concept, with an approach that represents a huge performance opportunity. And if that concept is daunting, if it seems impossible to achieve and makes everyone in the organisation sit up and wonder how we are going to actually do it, then you're on the right path."

So how do you make this possible?

"Break things down into bitesize chunks. Bit by bit you work through it. Motorsport is great for having clear deadlines – you know when the first race of the season is, you know what you're working towards.

"At the beginning, you think, 'How are we going to get there?' But as you progress, you look back and realise how far you've come. It's hugely rewarding and it fuels the belief that what you once thought might be impossible is actually possible. That's where the thrill comes from.

"It's OK to set a target that you don't know how to achieve when you first set out on the journey – a target that people think is impossible both in terms of time and performance. It's then a case of breaking things down."

Do you have to be comfortable with stepping into the unknown?

"Everyone wants the fastest car, but the only way you're going to get it is if you set targets that are really going to stretch you, that are wildly ambitious. That's what we're here to do – there's no point designing and building an F1 car that isn't the fastest.

"That fear you feel. That unknown. That trepidation. That question mark over whether something is even possible. That's where you need to be operating because when you're pushing that hard into uncharted territory, when you're going beyond what's gone before, that's when you're going to be outperforming your competitors.

"Formula One is all about competitive ingenuity. People in this sport are pioneers. You have to be if you want to fulfil the ambition of becoming a World Champion. And that is our ambition.

"There is no sport where becoming a World Champion is easy. Hard work is a given. It's not enough to come up with ideas that nobody else has come up with, you need to make those ideas work.

"And it's daunting because, if you're truly pioneering and using your ingenuity, there's no reference point: you can't look at someone else and say, 'Well they've made it work, therefore it must be possible.'

"But for me, that's what's really exciting. That's what makes this job, this sport, so thrilling."

The team is ambitious but that hasn't always been reflected on the track. How have you set about changing that?

"My first task has been getting to know people. I've spent a lot of time talking to people: speaking to those within the business and those outside the business, such as our partners Aramco and Honda.

"My experience is all in power units, I don't have direct experience of the world of aerodynamics or creating a Formula One car in its entirety, so that's given me plenty of opportunity to ask lots of questions.

"Just talking to people and listening. The listening part is the really important bit. It sounds so basic but it's been crucial for me to get an understanding of

RIGHT The tools and processes back at the factory will be critical to ensuring a better rate of success is achieved with updates to the AMR25 than was the case with its predecessors

> *"At no point can you ever think you're perfect. If I ever say, 'That's perfection,' then that's the time to kick me out the door, that's the time for me to retire"*

who everyone is, what their roles are, how everything fits together, how the organisation is working, where things are working well and where things can be improved.

"The update the team brought to Austin for the United States Grand Prix last year provided a working example. It didn't deliver the performance step expected; it's been a case of digging deeper to understand why this happened and implementing changes so that when we bring our next update to the track, which will be our 2025 challenger at the season opener in Melbourne, we're in a better position and it does deliver what we expect."

In-season development has been inconsistent over the past couple of seasons. Does there need to be a shift in focus from quantity to quality of updates to ensure a better hit rate?

"There is no lack of effort throughout the team. We definitely won the World Championship for the most updates in 2024, but those updates didn't deliver the laptime – and what everybody wants in this business is to deliver laptime.

"That's not to say we must get it right every time. I've seen statistics that show that in true research and development environments, a 20 per cent success rate is high. If we can get a 20 per cent success rate then that's good, but the difference ▶

is that this needs to happen at the AMR Technology Campus and not at the track.

"We need to make sure that all our tools and processes at the Technology Campus are working well enough to ensure that whenever we take an update to the circuit, we are at least 90 per cent certain that it's going to work on the track and meet our expectations.

"It's not easy to achieve, but it's what we need to be aiming for. We've got very powerful CFD tools and the most advanced wind tunnel in the sport coming online but they are only simulations; there will always be the risk of data not quite matching up with what we find on the circuit, but our simulations can give us a robust steer and I'm confident we can get to the point where we're right 90 per cent of the time. That's the level that World Championship-winning teams are operating at so that needs to be our aim at a minimum."

With new regulations coming into play and the significant growth and investment in the team, many people expect 2026 to be *the* year for Aston Martin Aramco. How are you thinking about the 2026 season?

"2026 is a huge opportunity for us but it's not just about '26, it's about '27 and '28 and '29 and '30. It's about building a team that can achieve sustained success. Yes, '26 is important but it's just another step on the journey. 2025 is also an important step on our journey and we are focused on improving our performance this year and carrying positive momentum into 2026.

"We mustn't underestimate the scale of the challenge to bring all these elements together. We've got to make the transition from a customer team to a works team at the same time as the new regulations come into play, and we've got to design and manufacture our own gearbox along with other components of the car that have previously been supplied to us by Mercedes.

"We're partnering with Honda, one of the best power unit manufacturers in the world, who are hugely creative and motivated, and then we have Aramco developing advanced fuels for us and Valvoline providing us with best-in-class lubricants. We're fortunate to have these powerhouse organisations as partners, they're at the forefront of their respective fields and bring so much experience and expertise. Our new Technology Campus will be fully operational by 2026 and we've got some brilliant technical minds joining the team. These are just a selection of all the puzzle pieces that we've got to bring together." ▶

BELOW It's no longer the efficiency just of the engine but the efficiency of the whole organisation that occupies Cowell's mind

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ABOVE The AMR25's livery celebrates the brand's glorious past, but the team's focus is firmly on future ambitions

And then there's the opposition...

"Every team is trying to set itself up for success with the significant change in the regulations, and you've also got a collection of power unit manufacturers that need to react to the regulation changes as best as possible.

"We've got to respect the fact that we're up against some mighty opposition, who are very well established. Mercedes, Ferrari, Red Bull, McLaren, these teams are exceptionally strong and, along with every other team on the grid, they will view these regulation changes as an opportunity.

"We can't control what they do. We can only control what we do. We've got to run our own race, focus on our objectives, our targets, and put all the pieces of the puzzle together as best as possible to seize the opportunity that 2026 presents."

How do you build a team that can regularly fight for the World Championship?

"This all comes down to building an organisation that's sustainable – sustainable in the sense that you're not compromising future performance by throwing everything at just one season.

"Yes, you need to be able to focus on the development of this year's car and you need a group of people focused on getting the best performance from the car at the track throughout the season, but it's also about making sure that there is sufficient focus on the development of next year's car and the car after that.

"You want to avoid a scenario where people are straddling multiple years because people tend to focus on immediate priorities and future priorities end up compromised.

"It's about investing in the future – investing in those new ideas that no one else has pursued yet and hitting those challenging targets.

"You need a group of people who want to climb Everest more than once – who are prepared to do whatever it takes to climb to the top and then do it all over again, and again, and again. That's the fundamental attitude and spirit that Lawrence and I are trying to build within the business."

And how do you get the same people to embrace your winning mindset and deliver Lawrence Stroll's grand vision?

"You need to get people to the point where they trust that those around them are doing a great job. Every time they look up to see what people are doing around them, they should be in awe of the work that their colleagues are doing. I find this motivates people to work even harder, push themselves further

and find ways of doing things better – because greatness tends to rub off.

"I want our people to think beyond the norm, to think creatively about the ways we can always improve on what we're doing – that's ultimately how we will end up being pioneers. That's the mindset I've been trying to instil from my very first day.

"At no point can you ever think you're perfect. If I ever say, 'that's perfection,' then that's the time to kick me out the door, that's time for me to retire."

The team has assembled the biggest collection of technical forces since the Mercedes F1 team that you were an instrumental part of at the start of the hybrid era in 2014. How are you going to get this technical structure to work?

"It's very much a case of trying to understand people, what their strengths are, how they can contribute to the overall objective, and then you've got to stitch the organisation together.

"Everyone should be playing to their strengths, so it's about working out what they are, how they fit in and how they can contribute to the car. It's up to me to make sure we've got the strength and balance in the team to deliver the best reward in terms of laptime."

Minimising losses is key to driving power unit efficiency – something you're well-versed in. How do you do that with people? How do you build an efficient and high-performing organisation?

"I think that very much comes back to people playing to their strengths and operating in the role where they can have their most positive impact on the car.

"I like to use the analogy of a 1,000-piece jigsaw puzzle. Each person in the team is a piece of that puzzle, but they need to know exactly what their responsibilities are and what everyone else's responsibilities are. Having this organisational clarity ensures that the pieces of the puzzle fit together well with no overlaps or gaps. Any overlaps or gaps are just inefficient.

"An efficient racing car is lots of downforce, minimal drag; an efficient organisation is great communication, no waste.

"People tend to become dissatisfied if they're doing exactly the same thing as someone else because it means that one of them is wasting their time. Equally, if you do a piece of work and then it just sits there waiting for the next person to pick it up, that's also frustrating. Organisational clarity drives out this kind of inefficiency."

Was that the motivation behind you also assuming the role of Team Principal and introducing a flatter organisational structure from the start of this year?

"Exactly. The changes are designed to improve organisational clarity and race car performance. That's why we took the decision to evolve the Aerodynamics, Engineering and Performance Departments into separate, dedicated trackside and AMR Technology Campus-based teams.

"The trackside team will be led by Mike [Krack], who becomes the team's Chief Trackside Officer, and the latter will be led by Enrico [Cardile] in the role of Chief Technical Officer, with both reporting into me. This restructuring means Mike's team can focus on getting the maximum performance out of the car at every Grand Prix and Enrico's team can focus on the complex challenge of creating a new race car."

Being CEO and Team Principal of a Formula One team sounds all-encompassing – unsurprisingly. What do you like to do outside of work?

"Given the intensity of Formula One, it's important to find the time to chill out and relax when you can. For me, the best way to do that is by spending time with my family and friends and walking my dogs."

It sounds simple, but perhaps that simplicity is what you need to balance out the complex nature of the industry you work in?

"Yeah, that's life outside of work for me, just chilling out. I enjoy nothing more than catching up with family and friends, chatting about life, the universe and everything."

What inspires you?

"I love the natural world. As an engineer, you try to better what nature's produced, but when you've been an engineer for a few years, you realise that you're never going to better what nature has produced. Nature is a great source of inspiration. Thousands of years of development, of evolution, can't be far wrong, can it?

"At this time of year, you see no leaves on the trees, but you know that in six months' time, miraculously, there will be leaves on the trees again. Wouldn't it be amazing if we could create devices with this similar regenerative property?"

Like self-healing carbon fibre? Sounds like something from Wolverine in the Marvel Comics.

"Well, it's not quite adamantium. [Laughs.] But it does go back to my earlier point of doing the impossible. Developing regenerative materials and devices might sound impossible, but perhaps it won't always remain a work of fiction. There are some very clever people out there who have already started trying to develop this kind of technology."

The origins of Aston Martin and the origins of your love of motorsport can be traced back to hillclimbing. Is that something you've given much thought to since joining the team?

"It has crossed my mind, the parallels between the origin story of this iconic brand – the famous Aston hill climb – and where my love for the sport began. The Aston Martin story is one of brave innovation and pioneering spirit, and I hope to write a successful next chapter in that story.

"From the age of five I used to watch and help my father compete in sprints and hill climbs, and then about 26 years ago I built my own sprint and hill climb car which I still have to this day. I competed in a sprint with it last year and have taken to the circuit in it many times – that's where I realised that I wasn't the fastest driver!

"The aspect I really enjoy is building the car and getting it through scrutineering. I enjoy racing, but there are many more talented people out there who can drive a car quicker than me. I rely very much on making sure I've got a good, strong engine to drive past people down the straights. I then try to keep them behind through the corners!"

If only it were that simple in F1...

"If only! We can't just give Lance and Fernando a car that's quick down the straights, we need to give them a car that's quick through the corners, a car that's quick everywhere – a car that's faster than anyone else's.

"Can you imagine what it would feel like if we did have the fastest car...?" RT

- The full interview was originally published on astonmartinf1.com

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A CASE OF THE RED *MISSED?*

Lewis Hamilton's defection from Mercedes to Ferrari is the biggest story for the 2025 season, but can the seven-time champion provide a fairy-tale ending? By **Tony Dodgins**

AS Formula 1 prepares for its 75th anniversary season, many are predicting a classic.

It is the last year of the current ground-effect regulations introduced in 2022, before swingeing chassis and power unit changes for '26. Natural evolution and car development tends to dictate that the longer a set of rules run, the closer the field gets. And it could have gone either way between McLaren and Ferrari in '24, a season in which four teams won multiple races.

The most fascinating aspect of '25 is Lewis Hamilton's move to Ferrari as he chases that elusive record-breaking eighth F1 title. When Ferrari got the opportunity to sign Hamilton, it couldn't pass it up, even if Lewis went on to have his worst F1 season since his 2007 debut with McLaren-Mercedes.

Undisputed GOAT?

Although Hamilton scored an emotional ninth victory at Silverstone, his first win since the penultimate race of the controversial '21 season, and inherited Spa after team-mate George Russell's disqualification, he was outqualified 19-5 by Russell (24-6 if the Sprint races are included). Whereas the pair had been split by mere hundredths for single-lap pace in their first two seasons together, in '24 Russell was an average 0.173s quicker. And Hamilton finished behind him in the drivers' championship too, for the first time in his F1 career outside the top six.

Hamilton's numbers – 105 race wins and 104 pole positions – are phenomenal, but he also benefited from an unprecedented length of time in the best car.

There was an interesting cameo, slightly tense, in the Hungarian GP cooldown room last year after McLaren finished 1-2 ahead of Lewis. Lando Norris was still peeved at having to concede the win to McLaren team-mate Oscar Piastri.

"You guys are fast..." Hamilton innocently observed.

"You had a fast car seven years ago..." Lando replied, a little tersely. "You made the most of it and now it's us..."

Norris had a point. Without denigrating Hamilton's achievements, people looking at the stats and declaring him the undisputed GOAT (greatest of all time) fail to factor in the unprecedented time in a superior car (2014 through 2020). In his 246 starts with Mercedes across 12 seasons, Lewis had 78 poles (31.7%). Not as overwhelming as you might think, his stats obviously taking a hit with Mercedes losing its edge under the new '22 regulations. What would those numbers have looked like for a Senna or Schumacher? Who knows.

> *"Even before he drove his first GP with McLaren, Hamilton admitted that one day he would like to drive for Maranello"*

When it came to negotiating an extension to Hamilton's Mercedes contract, the number of zeroes and longevity may have been bones of contention. He was being matched if not bested by the man in the other Mercedes and team principal Toto Wolff had one eye on the future. He had already gone through missing out on Max Verstappen to Red Bull because he was not in a position to offer him a race cockpit as Hamilton and Nico Rosberg were both on ▶

LEFT A seven-time champion, in the twilight of his career, and the most evocative team in F1 history: perfect marriage or doomed to disaster?

long-term contracts. He did not want the same situation again with talented, up-coming Kimi Antonelli. And, in January '25, Hamilton would celebrate his 40th birthday.

Ferrari's French team boss, Frederic Vasseur, smiled when he said that it was not that difficult to persuade Hamilton to swap silver for red, even if it was a seismic shock to the paddock when it was announced before the '24 season had even started!

Vasseur it was who ran Hamilton to the Formula 2 title way back in 2006 with ART, and the two stayed close. Now, of course, 'Fred' had replaced Mattia Binotto at Ferrari and was in charge of F1's most iconic, evocative team. Not to mention one that would pay Lewis handsomely. Even before he drove his first GP with McLaren, Hamilton admitted that one day he would like to drive for Maranello.

But, midway through 2024, some were questioning where Lewis's head was. And even suggesting that swapping out Carlos Sainz for Hamilton might not actually be an upgrade for the prancing horse.

From early in the '24 season, Hamilton's travails seemed to be rooted in an inability to get the best out of the Mercedes in qualifying. George Russell is an excellent qualifier and has been since day one at Williams, where he was dubbed 'Mr Saturday'.

Is there anyone quicker than Russell over a single lap? Arguably Verstappen and ironically, a certain Charles Leclerc, Hamilton's new team-mate at Ferrari...

The interesting thing was that Hamilton was almost resigned to being slower than Russell in '24, even though they'd been nip and tuck, throughout 2022-3. It was one of the big question marks of the season, but clearly no surprise to Lewis. As early as Monaco, he said, "I don't anticipate being ahead of George this year. I already know that I'm going to lose two-tenths going into qualifying."

As the year progressed, he regressed to "I suck in qualifying" and even, after Las Vegas, "I'm not fast anymore." That, of course,

Ferrari

RIGHT Celebrating an emotional ninth victory at Silverstone, his first win since the penultimate race of the controversial '21 season

BELOW The SF-25 features pull-rod front suspension, a route followed by both McLaren and Red Bull

was seized upon and spun into stories about how worrying such a declaration must be for Messrs Elkann and Vasseur at Maranello.

But from a man with more than 100 poles, to one suddenly making qualifying errors chasing his team-mate? What had changed? Retired drivers like Nico Rosberg and Jenson Button suggested that as you age, it's the one-lap pace that goes first. But with Hamilton, you suspect, it's more about the current generation of heavy, understeer-in, oversteer-out ground-effect cars being so badly suited to an intrinsically aggressive style. That got even worse in 2024 as flexi front wings introduced by McLaren and Mercedes early in the season, meant that ride heights were reduced further and probably prompted Hamilton's pessimism over his qualifying potential.

Hamilton likes to brake late, carry a lot of speed into the corner and then sort out the rear end. But the current generation of F1 cars make that very difficult.

"The car is very unpredictable," Hamilton explained towards the end of the season. "The floor's working and then it stops, then it starts. That's been the problem."

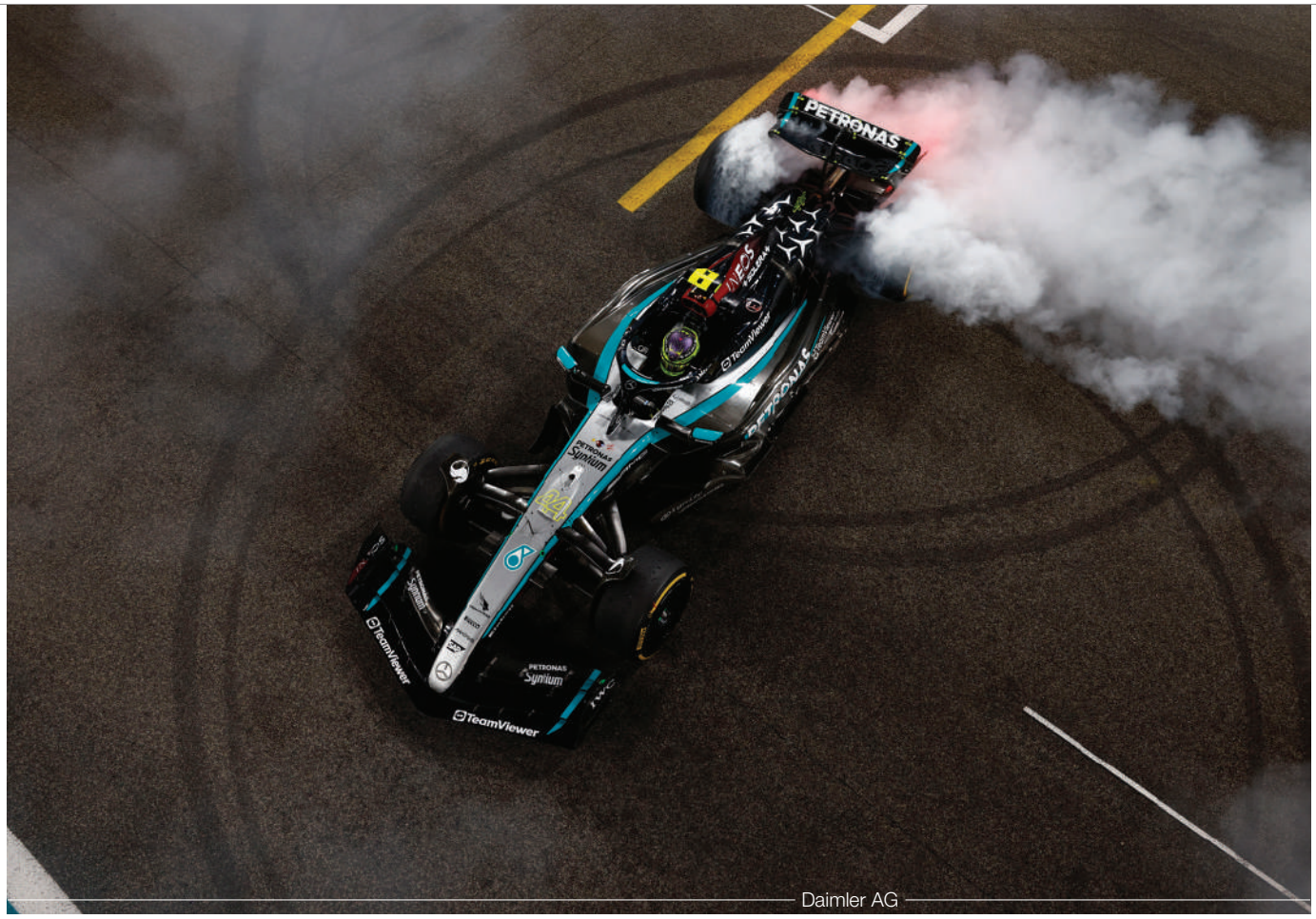
Those characteristics are worsened by the rakeless flat platform needed for consistent downforce that takes away any pitch to load up the front, which used to help generate the sharp front end Hamilton likes.

"Lewis has particularly struggled on single laps," Mercedes trackside engineering director Andrew Shovlin said in Hungary last year. "His long run pace is always there. It's more about the way that he wants to attack a corner. When you do that, then the car snaps to oversteer. You start to build tyre temperature. So, most of our work has been trying to give him a car that you can drive in his very attacking style and extract the lap time, without it breaking away on the way in and catching him by surprise."

> *"Hamilton likes to brake late, carry a lot of speed into the corner and then sort out the rear end. But the current generation of F1 cars make that very difficult"*

Hamilton was hugely frustrated at throwing away what he considered a chance at pole in a Mercedes working right in its sweet spot around a cold Las Vegas which is when he made his "not fast anymore" proclamation in the emotion of the moment. Vasseur, predictably, was asked whether he had concerns over his new signing?

"Not at all," he replied. "Look at the 50 laps he did in Vegas, starting from P10 and finishing right on the gearbox of Russell. I'm not worried ▶



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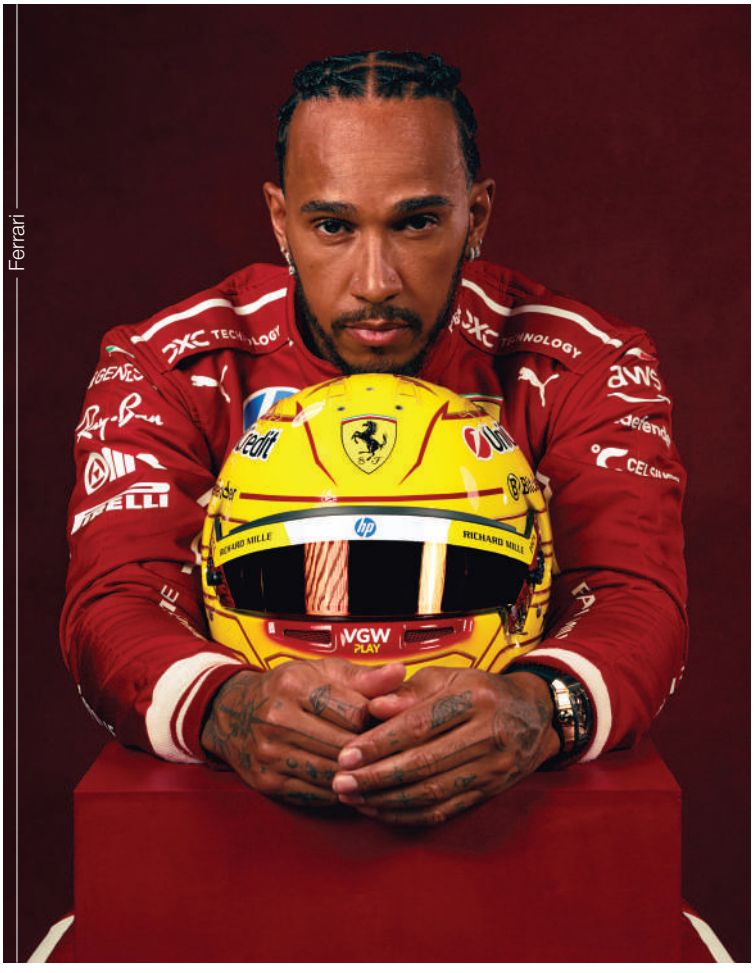
at all. Sunday is when the points are given out."

So, forget any lack of desire. The Silverstone win was fabulous, Hamilton only lost Spa on the road due to Russell's single-stop strategy proving advantageous, and, as Vasseur suggests, look at those recovery drives in Vegas and Abu Dhabi, in the latter passing Russell around the outside of Turn 9 on the last lap of their last race together.

Leclerc, and also Verstappen, drive in a similarly aggressive way. Charles, like Lewis, hates understeer. And interestingly at Ferrari, his qualifying delta versus Sainz was much closer in 2024, less than five-hundredths across the season. It will be fascinating to see how Charles and Lewis compare. If Ferrari can achieve the holy grail of giving them a sharp front end and a controllable rear, they will be the most formidable driver pairing on the grid. But if the '25 Ferrari is a front-runner and Hamilton sights that eighth title, he will need to overcome his team-mate first.

Leclerc is sometimes pigeon-holed as a great qualifier but less strong in races and prone to the odd error. The make-up of the 2023 Ferrari furthered the perception as he took five poles but invariably went backwards with degrading rear tyres. But that was the car, not him.

Conceptually, the '24 car had opposing characteristics. Sometimes Leclerc would struggle to generate enough soft tyre temperature for the first sector of a Q3 lap, notably Singapore. But the payback was better tyre usage on Sunday, allowing him a fine season spoiled only by a mid-year blip when Ferrari's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LEFT The recovery drive in Abu Dhabi, his final race for Mercedes, will have reassured his new employers

BELOW LEFT Ferrari is getting the Lewis Hamilton brand. Could it also get a rejuvenated driver?

BELOW Of the pre-season favourites, Red Bull and Ferrari have potentially the biggest gains to make with flexi wings over the opening exchanges of the season

Spain 'upgrade' brought back the dreaded bouncing and Ferrari was off the pace for half a dozen races.

On a street-circuit Leclerc has always been peerless and, helped by the slow-corner strengths of the Ferrari, poles in Monte Carlo and Baku last year could be taken for granted. He finally took an emotional win on his home streets. But in Azerbaijan he was no doubt kicking himself.

The moment the title was lost

As usual in a class of his own around Baku in qualifying, he took a fourth consecutive pole by more than three-tenths. He had the race fully under control during the opening stint on the medium tyre. But then Ferrari kept him out a lap longer than they should have done before pitting for hards, allowing Oscar Piastri to get too close. Oscar then caught Charles out with a great late lunge into Turn 1 to take the lead. Leclerc, concentrating on bringing his hard tyres in gently, had checked his mirrors, concluded that the McLaren was too far back and hadn't covered off the inside.

Still, Charles wasn't unduly concerned, thinking he would easily re-pass the McLaren later with DRS down the long straight. But he could not. The top element of McLaren's rear wing was twisting slightly at its outer bottom edges, opening a slight gap between the two wing elements and giving a mini-DRS effect when Piastri did not have DRS.

It reduced drag and gave Oscar a straightline speed boost, albeit small. Data from qualifying showed that, of the leading cars, McLaren had the slowest top speed when DRS was active, but the highest top speed when it was inactive. Even from just over half a second behind entering the DRS zone, Leclerc could not get a move done, whereas Piastri had passed the Ferrari from 0.7s back.

> *"McLaren had the slowest top speed when DRS was active, but the highest top speed when it was inactive"*

Rival teams lobbied the FIA to take action, estimating that the wing had been worth a couple of tenths. A week later in Singapore, McLaren's Zak Brown revealed that he had told the FIA that McLaren would not use it again. Which was no great sacrifice as it would only be needed again in Las Vegas where, coincidentally, McLaren had its weakest race...

Piastri's passing of Leclerc in Baku created a 14-point championship swing. With hindsight, it won McLaren the constructors' championship. Had it not ▶

Red Bull Content Pool

happened, the two teams would have finished level on points after Leclerc's stunning comeback drive to the podium in Abu Dhabi, and Ferrari would have won on a victory countback. Ferrari came that close to winning its first constructors' title since 2008.

That was all about the rear wing, but even more significant were flexi front wings that gave McLaren and, to a lesser extent Mercedes, more potential to balance their '24 cars. From the point of their introduction, McLaren had the fastest car on the grid but Verstappen's early-season advantage had been too big for Norris.

Flexible friend

Why didn't everyone go down the flexi-wing road to the same extent? Red Bull probably underestimated how much of its advantage would be eroded, particularly after Verstappen's start to the season. It was also hemmed in by the cost cap and reduced wind tunnel time as a consequence of exceeding it. Not to mention the fact that its chief designer, Rob Marshall, the ex-Rolls Royce man with the strong aero elasticity knowledge, was now a key figure at... McLaren!

At Ferrari, Vasseur was wary of committing limited resources to a tricky development area that the FIA might potentially stamp on. For 2025, the governing body has done just that. Sort of. More stringent front wing rigidity demands will be introduced, but only in time for round nine in Barcelona, giving rise to the very real possibility that the first third of the championship could have a very different look to the second two-thirds!

Potentially then, assuming enough in-house knowledge, Red Bull and Ferrari would appear to have the opportunity to make most gains by introducing flexi front wings for at least the first nine races. But, is the resource there in a cost-cap era to develop something for nine races, then concentrate on rule revisions mid-season, as well as preparing for the new regulations in 2026? Time will tell.

> *"In 246 starts with Mercedes, Lewis had 78 poles (31.7%). What would those numbers have looked like for a Senna or Schumacher?"*

In the meantime, Ferrari has unveiled its new SF-25, the most obvious change being a pull-rod rather than push-rod front suspension, a route followed by both McLaren and Red Bull. The Ferrari rear suspension, however, remains pull-rod.

"The thinking," Ferrari said, "is about cleaning up the airflow around the car while also giving greater scope for further aero development, which had pretty much been exhausted by the previous iteration."

Last year's car was the best-performing of all in slow corners, witness Leclerc's Monaco and Baku performances, but was no match for McLaren or Red Bull in high-speed corners, where it had less downforce.

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ABOVE Lewis Hamilton with his winning cars in the Great Hall of the Mercedes-Benz Museum. The dominance of the early hybrid cars might skew the figures, but Ferrari still leapt at the chance of signing one of its major rivals

RIGHT Charles Leclerc's stunning comeback drive to the podium in Abu Dhabi was a reminder of the tough challenge Lewis faces to rival his new team-mate

LEFT Ending the Prancing Horse's 17-year title drought would strengthen claims that Hamilton is the GOAT

It is expected that the new pull-rod front suspension will allow more anti-dive to be incorporated into the geometry, offering the potential to run the car lower and generate more high-speed downforce, hopefully without the confidence-sapping balance shifts that Hamilton suffered at Mercedes. But new chassis technical chief Loic Serra (ex-Mercedes), who replaces Enrico Cardile, who is now at Aston Martin, says that the front suspension is only one of many significant changes.

The car, Ferrari outlines, has been designed with the aim of maximising its development potential in a season when, Vasseur says, "every millisecond will count."

Ferrari seems bullish based on its simulations, with Vasseur saying: "We feel ready as a team to take the extra step required to be the best. I can't wait for the season to start."

It could be that Hamilton has timed his move supremely well but pre-season talk is cheap. As always, the real insights will come from those opening exchanges. Can Ferrari handle the rest? And can Hamilton handle Leclerc? RT

Ferrari

WHO'S LAUGHING NOW?

IT'S 1996. Jacques Villeneuve is coming to Europe amid much fanfare to take on the circuits that forged the legend – and ultimately claimed the life – of his father.

Jacques is an accomplished racer in his own right and winner of the previous year's Indy 500, not to mention a veteran of Italian F3 in his formative years. Yet all that many on this side of the Atlantic know about the Canadian rookie is that he has big shoes to fill as the son of Gilles Villeneuve.

And then the story comes out that he has been learning the Formula 1 tracks ... by playing a computer game. It sounds like a joke. Except nobody's laughing, because by that point the young Canadian is halfway through the most successful

A youngster once prepared for his grands prix on a computer. People thought he was joking. **Chris Pickering** talks to one of the F1 simulator pioneers – who's looking to change the game again

Newspress

debut season in the history of F1.

Two decades on, almost all professional racing drivers have now grown up with videogames and e-sports. Driver in the loop simulation has become a multi-billion dollar industry and it would be unthinkable for a top-tier team to go into any event without a considerable amount of preparation work in the simulator.

But there's a catch. While a PlayStation and a copy of Gran Turismo might work for circuit familiarisation and may even help to hone your racecraft (eh, Max?), the professional simulators required for vehicle development and setup work can be eye-wateringly expensive. At least one Formula 1 team is believed to have spent well in excess of £10 million on its simulator.

Oxfordshire-based simulator manufacturer AccuSim is looking to change that. The name might be new, but the expertise behind it stretches back to the very earliest days of driver simulation in Formula 1.

BELOW & RIGHT
Jacques Villeneuve shook the establishment by confessing that he prepared for F1 races on his computer. A year later, he was F1 World Champion after his Williams FW19 survived this kamikaze move from Michael Schumacher's Ferrari at a tense Jerez finale

Early days

AccuSim founder and technical director Dave Kirkman joined Williams in 1997, just as Jacques Villeneuve was on his way to the World Championship. The same year, a discussion between Villeneuve and one of the senior engineers at the team prompted Williams to start investigating the possibility of developing a dedicated driving simulator. The engineers had already developed their own proprietary software for offline lap simulation, so work began on integrating that into a basic driver in the loop rig.

A proof-of-concept was put together in 2001 using an old chassis for the cockpit and a projector shining onto the office wall. It's fair to say that the results divided opinion.

> *"He threw the steering wheel at the screen and said, 'no, it's rubbish'. Which was a smack in the face, as we thought this was going to be the future"*

"Ralf [Schumacher] *absolutely* hated it," recalls Kirkman. "He got out, threw the steering wheel at the screen and said, 'no, it's rubbish', which was a bit of a smack in the face as we thought this was going to be the future. But then we got Juan Pablo [Montoya] into the simulator, and we couldn't get him out of it. He loved it."

Ironically, Schumacher later returned to the Williams simulator during his time at Toyota, when the Japanese giant supplied the British team with engines. He could see by that point that simulators were becoming an essential tool, but admitted that he still hated using them. "It's the only time I've known Ralf Schumacher to admit that he was wrong," jokes Kirkman. ▶

Kirkman joined the group of engineers working on the simulator shortly after those initial trials. Encouraged by the proof-of-concept system, the team began adding new features. A collimated display, which wraps spherically around the simulator, came in 2004, improving depth perception. In 2007, the original force feedback mechanism (effectively a power steering system driven in reverse) was replaced by a high-performance motor from Moog. But the biggest change came when Kirkman got the go-ahead to design a motion platform in 2011.

"By that point, most of the other teams were using motion platforms. When Mike Coughlan became technical director at Williams, he said 'Why aren't we doing that too?' And then suddenly we had the money to develop one," he says.

Wishlist

Kirkman started laying down a set of requirements that he believed would be essential for accurate and consistent motion cueing. Top of the list was independent motion between the various actuators, which would allow the simulator to provide the same level of performance no matter where it was within its motion space. This is in marked contrast to the hexapod-type motion platforms used by traditional aerospace simulators, which offer limited movement in their other degrees of freedom once they're close to the limit of their range of motion in one axis.

"Consistency is absolutely essential if you're using a simulator for engineering development. You don't want to have a bump on the track that's present one lap and then not there the next because movement in another axis has exhausted your vertical movement," notes Kirkman. "Another thing we wanted to do was to provide direct angle cueing, where you match the rotation of the simulated vehicle one-to-one."

Rotational motion is one area where the movement of the car can be reproduced faithfully in the simulator. When it comes to sustained lateral and longitudinal accelerations, however, there simply isn't the space available on any motion platform to replicate the vehicle's motion one-to-one. Here, the focus shifts to providing onset cues, which combine with other sensations delivered by the simulator to trick the driver's brain into reacting in a representative manner, even though they're not subject to the same physical forces as they would be in the real car.

"To start with, we kept trying to increase the motion and then, along with a lot of the other simulator manufacturers, I think, we realised that we weren't actually using that much travel to deliver those onset cues," explains Kirkman.

The human vestibular system has a series of fluid-filled 'canals' laid out in a figure of eight shape inside the inner ear. As the fluid moves, it bends the hairs inside those passages, which send electrical impulses to the brain, providing a sensation of balance and motion.

"What we're effectively trying to do is give the driver's vestibular that feeling of turning into a corner," says Kirkman. "And then when you start experiencing oversteer, for instance, the centre of that rotation changes. So, what we're doing is changing the centre of rotation for the motion platform."

The vehicle's ride characteristics are also important to simulate. This can help the driver to place the car relative to the kerb or a bump in the track, but it can also provide additional cues as to the handling characteristics. For instance, the ride characteristics of a softly sprung car travelling in a straight line will hint at the weight transfer effects that the driver is likely to experience when they reach a corner.

Some things remain very difficult to cue accurately. The explosive deceleration when a Formula 1 driver hits the brakes being a good example.

"We found that ±700 mm of travel

LEFT AccuSim's Trident Genesis motion platform has been developed with much attention paid to the simulator's size and ease of installation

is enough to handle most things, but it doesn't generate enough of a kick for Formula 1 braking. It results in a sensation rather like brake fade. And my philosophy – both at AccuSim and when I was at Williams – has always been 'if you can't do it properly, don't do it at all'. You risk distracting the driver if you try to put in cues that you can't really deliver sufficiently," notes Kirkman.

Conversely, it can sometimes be worth filtering out some of the motion to focus on the cues that are most important. The notoriously bumpy main straight at Sebring, for instance, can be quite unpleasant and the high frequency chatter this produces adds little to the simulation, so the engineers might be asked to turn the ride sensitivity down on this portion of the track. On the other hand, it might be turned back up again for areas where heave motion significantly impacts the balance of the car, such as going into the Corkscrew at Laguna Seca.

One of the challenges attached to motion platforms is what's known as washout. The accelerations are generated by moving the platform, but because it has a finite range of travel, the simulator has to move back towards the centre before it can exploit the full range of motion again. This is disguised by moving the platform as slowly and smoothly as possible, and keeping the graphics projected onto the screen in line with the cockpit. There's no way around this with linear movement, but some big-budget simulators have found a solution for rotational motion, simply by giving the cockpit unlimited 360-degree travel within a wraparound screen.

> *"You can cover 98 per cent of use cases without having to spend an extra £10 million on an unlimited yaw platform"*

"There are times when continuous yaw movement can be useful, but what we found was that a finite range of yaw moment – providing it's big enough – is fine for the vast majority of simulations. You can cover perhaps 98 per cent of use cases just as well with that without having to spend an extra £10 million on an unlimited yaw platform," comments Kirkman. ▶

BELOW AccuSim founder and technical director Dave Kirkman was a simulator pioneer

New platform

Kirkman has set out to channel this experience from two decades of simulator development into the design of AccuSim's new Trident Genesis platform. It uses an evolution of the wedge concept that he first developed at Williams to maximise performance in heave, pitch, and roll. This design is said to minimise friction but maximise structural stiffness, eliminating unwanted resonances in the structure to provide extremely accurate motion control with latency as low as 1 ms and bandwidth as high as 100 Hz.

"I've previously worked on simulators where there were some resonances in the frequency range that we were interested in for cueing," he says. "The result was that we had to put filters in to prevent the platform transmitting those resonances. We've gone back to first principles with the design of the Trident Genesis to eliminate resonances in that range that you're interested in, which means that you don't need any filtering and you end up reducing the latency quite considerably."

Careful attention was also paid to the simulator's size and ease of installation. The motion platform occupies a footprint of just 2 x 2.4 metres and no special isolation slabs or clearance cutouts are required for installation.

"In my view, the two main drawbacks of the existing simulators are that they're just too big and too expensive," says Kirkman. "One of our first customers is BMW M Motorsport and they needed a system that met the highest technical standards, but they also wanted something with a compact footprint that would be very easy to install."

BMW's road car operation already has a large suite of simulators (14 of them at the last count) but the requirements for a motorsport simulator are subtly different. Even the most cosseted cars set up for circuit racing are significantly stiffer than their road-going counterparts, which pushes them further up the frequency range. Responses need to be pin-sharp and even the smallest changes in the handling balance need to be communicated clearly and consistently. We're told that the primary goals for the BMW M engineers were to significantly improve latency and bandwidth compared to the existing systems.

> *"My philosophy has always been 'If you can't do it properly, don't do it at all'"*

Just as with a vehicle, limiting the size of the simulator sets up a virtuous circle. A smaller simulator is lighter, which means there's less mass to accelerate and less deflection in the structure that's controlling

RIGHT Having abandoned the development of its own motion platform beck in 2017, BMW M Motorsport has chosen AccuSim's Trident Genesis Motion Platform to develop its LMDh and GT challengers

BELOW BMW M Motorsport will also be using AccuSim's new ground-breaking AccuVision LED display with the new simulator

DPPI/FIA/WEC

the motion. It's even been suggested that the compact footprint of the Trident Genesis would allow it to be put inside a truck and taken to the circuit.

"Teams will generally try to get the drivers into the simulator as soon as they get back from the track, because to start with they will drive it in exactly the same way as they drove the car. There are often limitations in things like tyre models that the drivers will adapt to as the day goes on in the simulator, so it's the first 10 or 15 laps after they've stepped out of the real car that are generally the most useful," comments Kirkman. "I wanted to make something compact enough that it could actually be taken to the track in the back of a truck and used with a VR headset."

BELOW AccuSim's intent is to disrupt the driving simulator market

All drivers go through this adaptation phase to a certain extent, where they subconsciously learn to exploit any inaccuracies in the vehicle or tyre model. Kirkman notes that this is one of the reasons that some drivers are particularly good in the simulator, but not necessarily as quick in real-life, as they use these quirks to extract a faster lap time than physics would allow in the real world.

Bringing F1-level tech within reach

Another benefit of a smaller simulator is that it reduces the material costs, he points out: "Our system really is much smaller, and that makes it less costly to produce. We've also deliberately kept the headcount at the company manageable – there's only four of us at the moment, so we're not passing on the overheads of a larger organisation."

For now, AccuSim has elected to go with a finite yaw range, which also significantly reduces the cost, Kirkman points out. Exact pricing has yet to be shared, but he says that the Trident Genesis will cost around half the price of existing systems. It's hoped that this will allow the more cost-conscious branches of motorsport to start benefiting from Formula 1-level simulation technology.

After all, the world has moved on. Aspiring drivers these days are just as likely to come from e-sports as from karting, just as CFD has replaced tufts of wool and windswept airfields.

Villeneuve, it seems, was on to something. RT

ITALIAN RENAISSANCE

Lancia's return to the stages is breaking records – even before its new rally car has turned a wheel in anger. **Anthony Peacock** explains why

THIS might just be the motorsport news story of the millennium: at least as far as Italy and rallying are concerned.

For the first time in more than 30 years, Lancia returns to the rally stages in an official capacity – which feels like a bigger comeback than Elvis.

But don't just take our word for it. Before even turning a wheel in anger, the new Lancia Ypsilon rally car has already beaten a world record by becoming the fastest-selling rally car in its category.

In just three months, a staggering 84 examples of the car have already been sold, completely unseen. To put that into context, less than 100 Ford Focus WRCs were ever made throughout their 11-year factory career, and there are just over 150 Citroen C3 Rally 2 cars on the world's stages following the car's debut in 2018.

This Lancia is set to smash all records, as team director Eugenio Franzetti (who combines his role with overseeing the DS Formula E programme) acknowledges.

"We all know that Lancia is a legend, so we were certainly expecting a lot of interest and background noise when we launched the programme," he said. "What we got instead was an explosion. Even we were surprised by the passion and enthusiasm with which people took to this car."

He shouldn't have been so astonished though. Just look at it: it's a Lancia with Martini stripes. Enough said. ▶

DPPI/Stellantis

Stellantis

ABOVE Miki Biasion, the most successful Italian rally driver of all-time, with Luca Napolitano, Lancia brand CEO, and the Lancia Ypsilon Rally 4 HF

LEFT Between them, the Fulvia Coupè HF, Stratos, Rally 037, Delta 4WD and Delta HF integrale propelled Lancia to 15 world rally titles

ABOVE The brand has been inundated with interest, captivating audiences with the Ypsilon Rally 4 HF at a recent series of meetings

DPPI/Stellantis

RIGHT Miki Biasion has helped develop the new car, here seen at a test session in France

> *"Lancia is a legend, so we were certainly expecting a lot of interest and background noise. What we got instead was an explosion"*

Actually, that's not quite true. The stripes are part of what's described as a tribute logo to honour Lancia's illustrious heritage, at no cost to Martini, making this the most prolific example of free sponsorship in rallying since the event that's still known today as the 'RAC Rally' (despite the fact that the Royal Automobile Club stopped sponsoring it back in 1997).

Miki Biasion, Italy's two-time World Rally Champion with the Lancia Delta in 1988 and 1989, now Lancia's official brand ambassador and development driver (for the new Ypsilon road car as well) summed it up perfectly: "If you're a Formula 1 driver, you want to drive for Ferrari. If you're a rally driver, you want to drive for Lancia."

The elephant is back!

It's this enduring appeal that has led to the unprecedented commercial success for the new Ypsilon HF Rally 4, to give the car its full name. The revival of the iconic 'High Fidelity' HF moniker (complete with the traditional charging elephant logo to denote unstoppability) finishes off the look.

In this instance, High Fidelity has nothing to do with audio: instead it references an exclusive club originally founded at the 1960 Geneva Motor Show for loyal Lancia owners who had purchased at least six new cars.

It later became the symbol of HF Squadra Corse Lancia, established in 1963 by team boss Cesare Fiorio... and guess what? The 'Squadra Corse' name is back as well (albeit now under the Stellantis umbrella) to successfully tick every nostalgic box.

Even Franzetti isn't immune, calling his latest role "a dream come true". When he was younger, the Italian used to sneak onto the stages to watch the dominant Lancia squad in action. Now he's in charge of the team.

And it's important to note that this isn't even a top-tier return – yet. Lancia is starting with humility, right at the bottom of the FIA rallying pyramid with a Rally 4-spec car. This means a 1.2-litre, 3-cylinder, 4-valve-per-cylinder PureTech Turbo engine with modified turbines and exhaust, and a specific engine management system to

deliver 212 horsepower. The driven wheels are at the front, with a five-speed SADEV dog ring gearbox and mechanical limited-slip differential.

The Ypsilon Rally 4 HF features the Common Modular Platform (CMP) — used for the first time by Stellantis Motorsport and different from the one on the Group's other Rally 4 vehicles. The trellis-shaped welded-tube roll cage has been built on top the new platform, creating a lighter and stronger chassis.

All this can be yours for just €74,500 Euro, so it doesn't take a mathematical genius to work out that Lancia has so far banked more than €6.25 million courtesy ▶

ABOVE Sales of the new car have rocketed

of its prodigious new baby.

Rally 4 is the basic route into rallying, eligible for most championships, but Lancia is understandably focusing on its own one-make Trofeo, which will run on six rounds of the Italian championship this year.

There's a generous financial prize pool of around €300,000, but the main attraction is a prize factory drive on the 2026 European Rally Championship. Given that the last Lancia 'factory' driver was Carlos Sainz in 1993 (when the Delta was run by Jolly Club, in Repsol colours) this is a big deal.

> *"If you're a Formula 1 driver, you want to drive for Ferrari. If you're a rally driver, you want to drive for Lancia"*

"Most of all, the Ypsilon is a fun car to drive, which has been born well; even I was surprised how good it was when I first drove it," said Biasion. "Obviously the biggest difference compared to the cars that I drove in the past is that this is a rally car based on a road car. In fact the feeling is fundamentally similar to the car that you can buy in the showroom."

And Biasion should know, because in a previous life, after he hung up his helmet, he used to be a Lancia dealer in his home town of Bassano del Grappa, not far from Verona. One of his championship-winning Deltas used to occupy pride of place in the showroom, and Miki also owns a classic Lancia Fulvia rally car – which inspired some of the styling on the new Ypsilon.

"We worked hard on the development ▶

ABOVE The quest for the next generation of rally stars will see the 2025 Trofeo Lancia take place across six rounds of the Italian Rally Championship

BELOW The Fulvia, here seen winning the Rallye Monte-Carlo Historique, has inspired some styling aspects of the new rally car

Nicolò Mazzini

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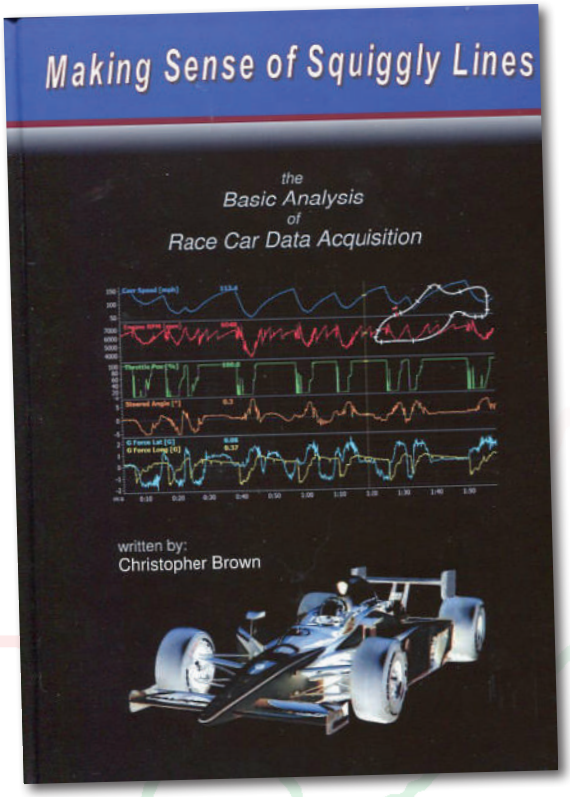

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and adaptation from road car to rally car," continued the 67-year-old. "In particular, engine response and mapping, grip and handling – by adjusting springs and dampers – as well as braking and gearshift response. I'm very, very happy with the result, which is definitely worthy of the Lancia name."

So this innovative programme is more than just a revival; it's a statement of intent. Yet it's what Biasion, Franzetti, and Lancia CEO Luca Napolitano don't say that is arguably even more interesting that what they do.

Napolitano, who was given the responsibility of reviving the almost-defunct Lancia brand back in 2021, pointed out at the Ypsilon launch: "The memory of our glorious Stratos, 037, and Delta – 15-time world champions – fuels our desire to return with style and determination."

> *"What we see now is just the first chapter in the renaissance of Lancia"*

So do we really believe that such an illustrious lineage would stop at a humble Rally 4 car? Within the Stellantis Group, which also makes Citroen, Opel, and Peugeot rally cars, there are huge economies of scale – the new Lancia took a lot from the current Peugeot 208 Rally 4 – and also a phenomenal amount of rallying talent and experience.

For example, Didier Clement, who now looks after the Citroen C3 Rally 2, engineered Sebastien Loeb to the bulk of his nine world titles, while Citroen's WRC2 star Yohan Rossel did a lot of Lancia's Ypsilon testing alongside Biasion.

ABOVE The stripes are part of what's described as a tribute logo, to honour Lancia's illustrious heritage, at no cost to Martini

BELOW The new car features the famous HF moniker, complete with the charging elephant logo to denote unstoppability

Lancia back in the big time?

It wouldn't take a lot to create a competitive Rally 2 car using technical shortcuts from the C3 (which is currently jointly leading this year's WRC2 championship). And from there, it's designed to be a much smaller leap – both financially and technologically – to the top Rally 1 category in future, with new rules coming in 2027 that will be set in stone for the next 10 years.

These fresh regulations are designed to dramatically reduce costs and become technically much more flexible. The goal is to open up options with all the different powerplants that could be available in ▶

Giorgio Piola

NEW

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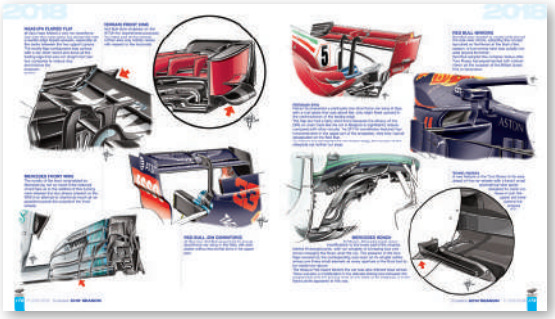

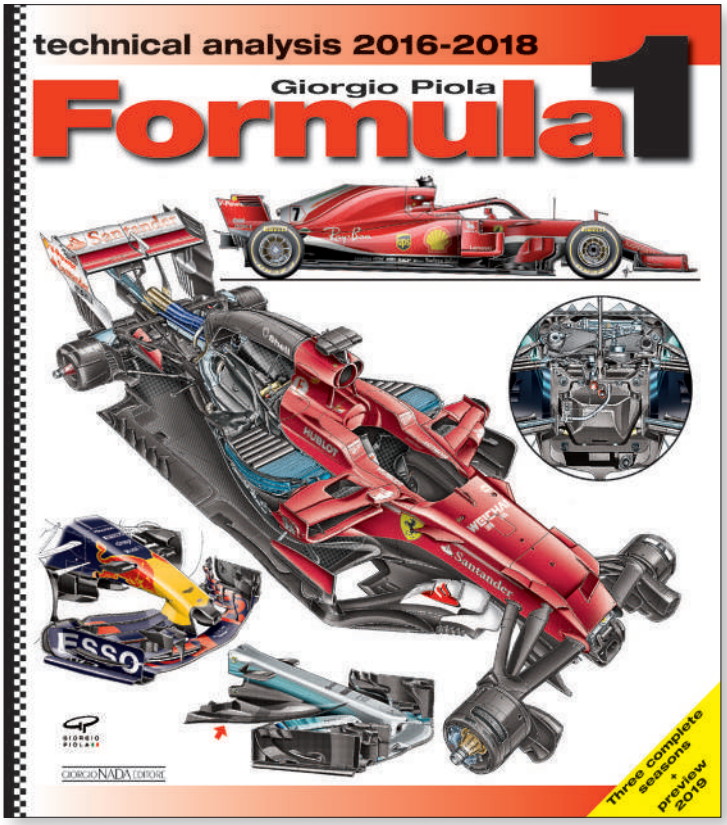

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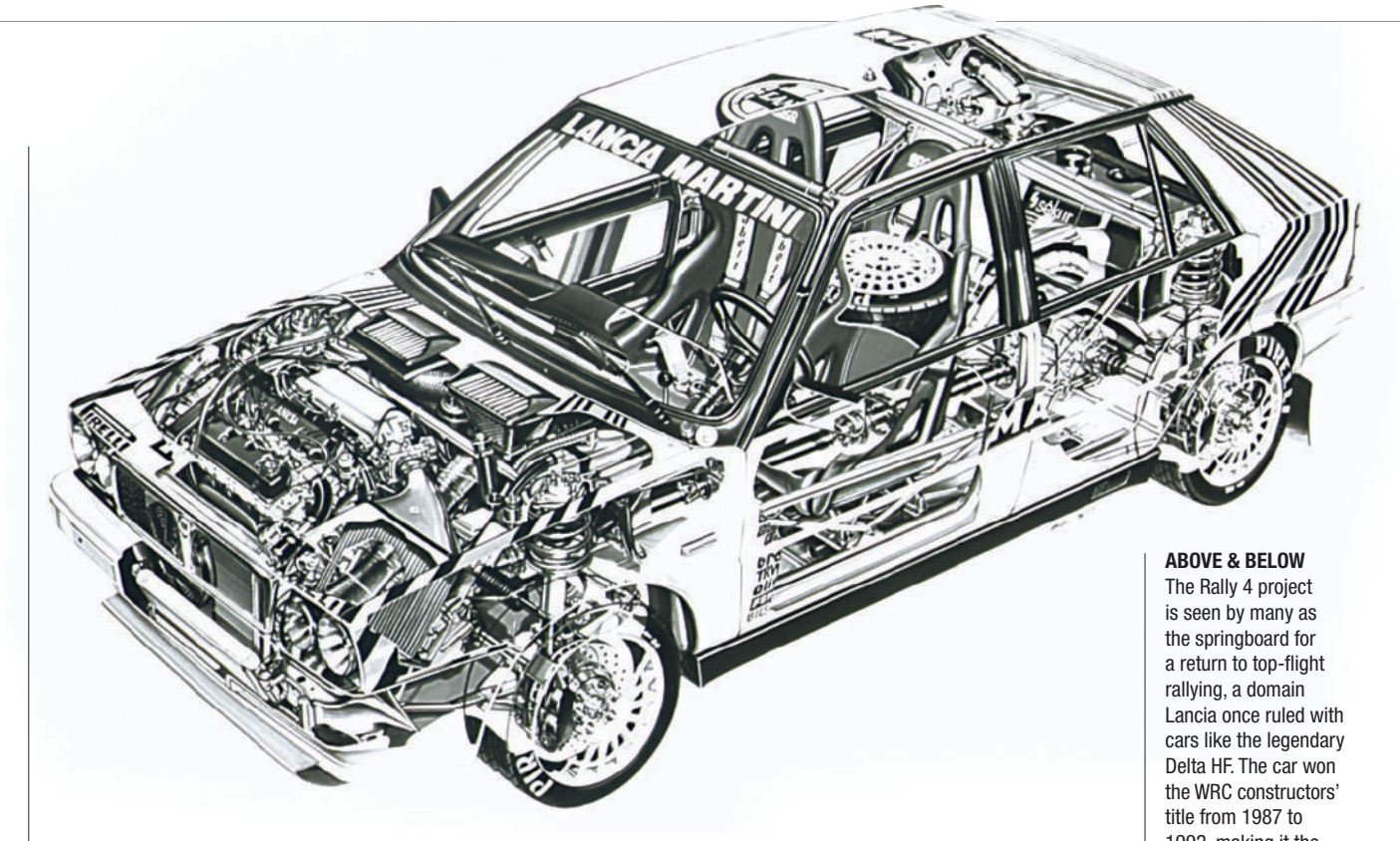


ABOVE & BELOW
The Rally 4 project is seen by many as the springboard for a return to top-flight rallying, a domain Lancia once ruled with cars like the legendary Delta HF. The car won the WRC constructors' title from 1987 to 1992, making it the most successful individual model in rallying history

future, and allow more manufacturers (as well as private teams) to take part.

Given the Lancia's astonishing commercial success, it's inconceivable to think that there's not a working group within Stellantis looking at this right now – although nobody is officially saying so.

There are plenty of hints lurking under those Martini stripes though. There's a strong focus on youth, with the Lancia Trofeo divided into Junior (under 25), Master (25-35), and Expert (35 and above) categories. The Juniors are the crews that Lancia wishes to cultivate, in order "to inspire the next generation of champions", as Biasion artfully puts it.

Of course, it would help if they were Italian too – as up to now, Biasion remains Italy's only world rally champion. Sandro Munari, another noted exponent of Lancia, would have won the title in 1977, but that predates the official creation of the drivers' championship by two years.

Most of Lancia's technical partners are Italian too: a key name is Sparco, which supplies all the race kit and overalls, but also an intersection with fashion

Photos: Stellantis

designed to thrust Lancia's rally campaign firmly into the lifestyle market. After all, looking the part is just as important as going fast in Italy.

Sparco has already been marketing Martini-themed accessories for a while, so we can expect an even wider range of retro cool clothing (and racing shoes) in future – as well as the Ypsilon's roll cage, seats, and steering wheel.

TM Tecnologie supplies the brake system. The Ypsilon Rally 4 HF features 330 mm front ventilated disc brakes in the track configuration, which guarantee powerful braking and allow for off-throttle braking – a must in rallies, especially Italian ones where one constantly encounters climbs and descents.

Italian dream

Magneti Marelli supplies the engine management system, the exhaust is by Supersprint, while Speedline does the alloy wheels – but the tyres are actually Michelin rather than Pirelli. Another very well-established non-Italian supplier is Öhlins, responsible for the three-way, adjustable shock absorbers that were chosen for the MacPherson suspension. These are tried and trusted names that customers have unhesitatingly bought into.

Such has been the unprecedented demand for the car that homologation was put back to March 1, to allow all drivers taking part in the Trofeo the chance to have their cars delivered and get some testing in prior to the first round, which is at the start of May on the legendary Targa Florio in Sicily.

Before then, Lancia will be making a special appearance on the Rally Piemonte from 11-13 April: the marque's home event close to Turin. As Napolitano puts it: "What we see now is just the first chapter in the renaissance of Lancia."

After years of having just one model on sale – the previous-generation Ypsilon – the new roadgoing Ypsilon (a petrol hybrid) is already on sale in selected European markets, with an all-electric high-performance HF version coming out very shortly too.

Not only that, but there will be a new Lancia Gamma saloon coming next year – and then a new Delta, which Lancia executives are somewhat cagey about.

Just think about that for a second. Is it really a mere coincidence that Lancia is building up some rally knowledge again, just when a new Delta is in the pipeline? And the WRC rules are about to change?

Who knows? But as Biasion himself says: "let's dream". With a history this good, you just want to put it on auto-repeat. With extra-loud Martini stripes. RT

> *"The memory of our glorious Stratos, 037, and Delta fuels our desire to return with style"*

DPPI/Stellantis

RIGHT The new Ypsilon Rally 4 HF received over 80 preorders across Europe in just the first three months

WINGED WONDER

The wait is over: the Valkyrie Le Mans Hypercar is finally racing. **Gary Watkins** examines the start of a new chapter in the Aston Martin story

FEW racing cars have had longer gestation periods than Aston Martin's Valkyrie Le Mans Hypercar.

More than five and a half years after the project was announced on the eve of the 2019 Le Mans 24 Hours, the car finally went into battle with a debut in the World Endurance Championship curtain-raiser in Qatar at the end of February. The road to that point has been long and winding, involving changes of regulations, as well as ownership, management and company structure at the British manufacturer.

The new Aston Martin racer, now simply called the Valkyrie after losing the AMR-LMH suffix announced last year, is a latecomer to what we are now billing as a golden age of top-flight sportscar racing, but it is actually one of its foundation stones. The Automobile Club de l'Ouest and the FIA finally confirmed that they were pushing on with the LMH rulebook in June 2019 when Aston and Toyota concurrently affirmed their commitment to the new regulatory set.

The world had long since known that Toyota was developing the car that became the GR010 HYBRID. But the twin organisers of the WEC didn't finally commit to a class that had been in the making since the spring of 2018 until it had two major OEMs signed up.

But it was the next twist in the road to sportscar nirvana that derailed, temporarily as it turned out, the Valkyrie programme. When the ACO and IMSA announced the LMDh class as a new way for manufacturers to enter both the world championship and the North American IMSA SportsCar Championship on the eve of the Daytona 24 Hours in January 2020, Aston knew it had a problem. Its business

DPPI/WEC

ABOVE The Valkyrie finally made its global race debut at Qatar's World Endurance Championship opener

case for a racing Valkyrie involved selling customer cars. A most likely cheaper option in the form of cars built around what was meant to be the next generation of LMP2 machinery blew a hole in that.

That explains why, within weeks of the so-called convergence announcement at the opening round of the IMSA series, Aston told the world that it was shelving its LMH project. It didn't help that Aston was undergoing change. Just days after the convergence revelation, clothing billionaire Lawrence Stroll finalised a takeover of the British car maker and assumed control. It was quickly followed by the news that Aston would be going F1 for the first time since 1960 – the team that had become Racing Point after his rescue of Force India in 2018 would be renamed Aston Martin for 2021.

It looked like the Valkyrie LMH would be consigned to the history books, another failed attempt by Aston to repeat its lone Le Mans triumph in 1959. Yet convergence did end up playing a part in the revival of the Aston programme: it turned competing at the highest level of endurance racing in the WEC and IMSA into a tantalising prospect for the historic marque.

The exponential growth of the top classes of sportscar racing at world level and in North America – respectively known as Hypercar and GTP – made the case for Aston's return a compelling one. On the ▶

Aston Martin

2019 announcement of the Valkyrie, Aston could look forward to racing against Toyota. All these years on it is going up against Ferrari and Porsche, its natural competitors in the road car marketplace, as well as a host of other manufacturers, BMW included. There are now eight OEMs represented in the WEC, as well as two more racing exclusively in IMSA for the moment and a further two on the way.

"The competition is the same competition that we face in the marketplace, so it is right for us to be involved," said Aston Martin head of endurance motorsport Adam Carter at the 2023 launch.

> *"Billed as a latecomer to a golden age of sportscar racing, but actually one of its foundation stones"*

Yet there are more reasons why the Valkyrie has belatedly made it into competition all these years after its initial launch. A new direction in development of what started life as the original Valkyrie racer at Multimatic Motorsport ultimately provided the catalyst for the revival. Aston had announced plans for a track-day only version of its super-sportscar conceived by Formula 1 design legend Adrian Newey as early as 2018. The car, known as the AMR Pro, launched in 2021 was effectively a reworked version of what would have been the LMH race car.

This long-wheelbase Valkyrie, sans the rear axle hybrid system of the road car, was a racer in all but name. It seemed somehow wrong that it wasn't going to hit the track in anger, or so thought Gabe Newell, the tech entrepreneur who is the patron of The Heart of Racing squad that will mastermind Aston's twin attacks on WEC and IMSA.

When the team established for a GT Daytona class IMSA campaign with an Aston Martin Vantage GT3 in 2020 received an AMR Pro as a corporate tool, he had a simple question for THOR team principal Ian James. "Why is this car not racing?" Newell asked. "Because it should be!"

James had to explain the complicated reasons behind why the Valkyrie had never made it into competition, but he picked up Newell's idea and ran with it. In 2021 he began what he calls "reaching out" to Aston about the possibility of re-invigorating the Valkyrie race programme. "I got a 'no'

LEFT The AMR Pro developed by Multimatic was a catalyst for the WEC project to be revived

BELOW The lure of racing against the same competition it faces in the marketplace, the likes of Ferrari and Porsche, was a strong one

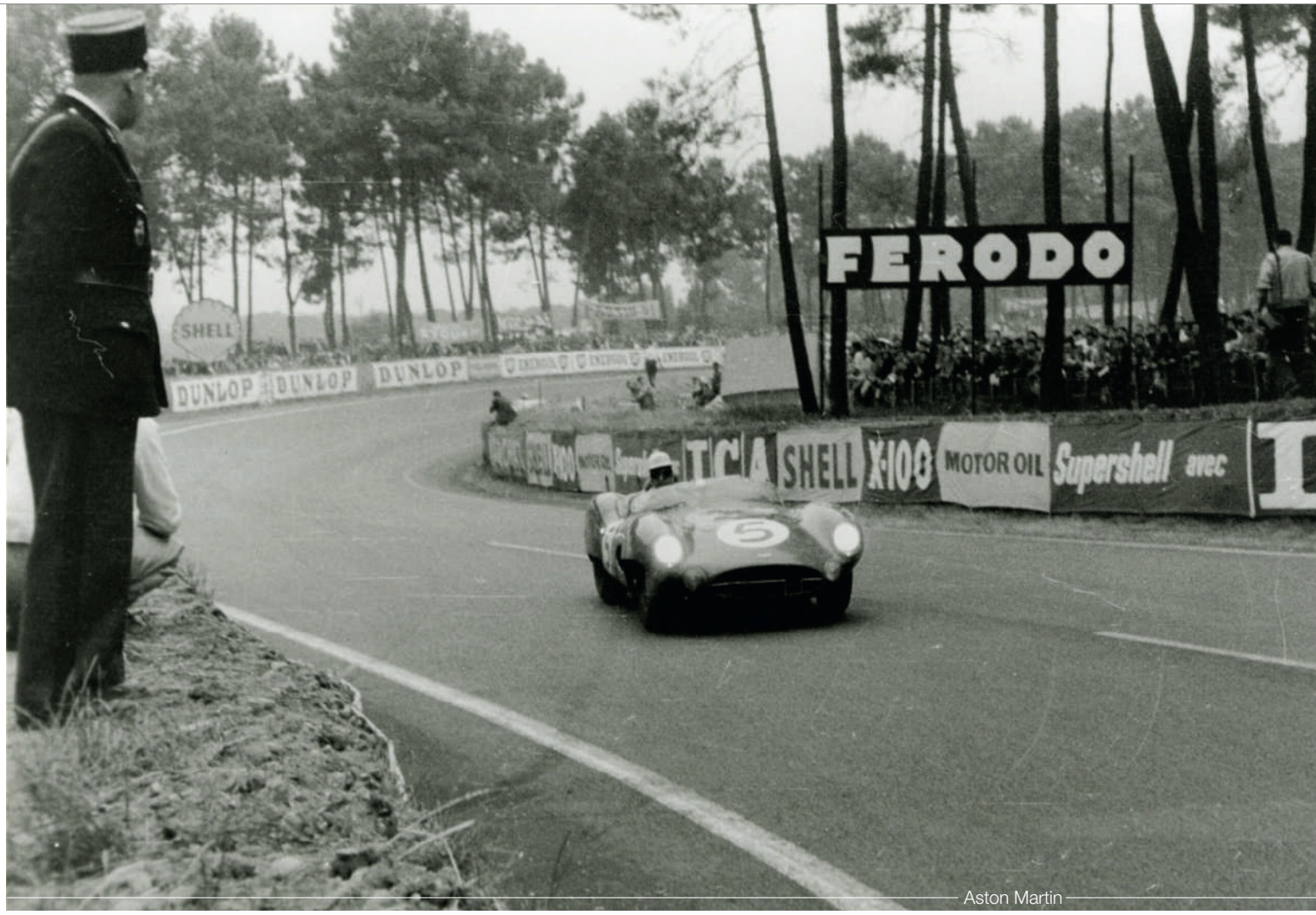
initially, because the programme had been ended," he recalls. "But I continued pursuing it."

Senior management changes at Aston didn't make his life easy. Tobias Moers, the former Mercedes-AMG boss installed as chief executive of Aston by Stroll in August 2020, was replaced in '22 by ex-Ferrari CEO Amedo Felissa, with Adrian Hallmark taking the top job in September '24. But, explains James, "slowly the idea gained traction". Everything started to come together during 2023 ahead of the October launch of the programme on Aston Martin's new technology campus adjacent to the main gates of Silverstone circuit.

The stars were starting to align to allow the revival of the Valkyrie race project. They included the establishment of Aston Martin Performance Technologies, which acts as a conduit of technology between the racetrack and road, as well as the introduction of the F1 budget cap for 2021 freeing up resources. Carter calls AMPT a "portal or a facilitator for getting true motorsport engineering back into the production line".

"There are many things that have happened with the sands of time," explains Carter. "Over that period of time various things have changed in terms of the leadership and strategy around Aston Martin. The landscape has changed, which has allowed ▶

DPPI/WEC



Aston Martin

the stars to align in order to bring the programme together in order to get the Valkyrie into sportscar racing as was always desired."

The technology

The 'new' Valkyrie has been designed to the Hypercar subset of the LMH regulations – there are two columns: 'Prototype' and 'Hypercar'. The second route into LMH was the result of a push from a group of manufacturers, Aston included, after the publication of the original rules in December 2018. They argued that the regulations as they stood didn't take enough cost out of the replacement for LMP1, the guiding principle behind the new category. Basing a car on a street vehicle was one way of achieving greater cost reduction.

The Valkyrie has been developed out of the AMR Pro and Aston stated at the '23 launch that it would pick the 'Prototype' column. That has now changed. "It is very important that the car is developed as a 'Hypercar' and is a Valkyrie product," explains Carter. "The FIA and the Automobile Club de l'Ouest [who jointly write the rules for the WEC and run the series] have created a competitive platform between all of the car variants. What it does for Aston Martin is that it allows us to have a car that has a blood line to the road car and have that close representation and links with the road product. That is important."

This philosophy also explains the approach to the aerodynamics of the racer. The new LMH has to fit into the performance windows for downforce and drag laid down in the regulations, but there was no desire to tinker with the look of the Valkyrie to get there. "We went out with great intention of leaving as much as the outward facing surfaces as per the Valkyrie [road car]," explains Carter. "In terms of repositioning the car in the performance window, a lot of that has been done on the underfloor."

Running as a hybrid was never on the table for Aston: it made that clear back in 2019 when the original project was announced. The LMH rules would allow the car to run with a rear hybrid because it is present on the road car, but Carter says that emphasis on the car's bespoke V12 was important at a time when Aston, unlike the majority of supercar makers, is continuing with the classic multi-cylinder engine concept in normally-aspirated form through its range. The car's 6.5-litre V12 developed by Cosworth in Northampton, close to Aston's Gaydon headquarters, pushes out more than 1,000 bhp in the road car: maximum power for the complete powertrain for LMH and LMDh machinery is 520 kW, which equates to 697 bhp.

Carter also reveals that running as a hybrid would ▶

ABOVE Aston Martin is challenging for a first outright victory at the 24 Hours of Le Mans since Carroll Shelby and Roy Salvadori triumphed in the Aston Martin DBR1 in 1959

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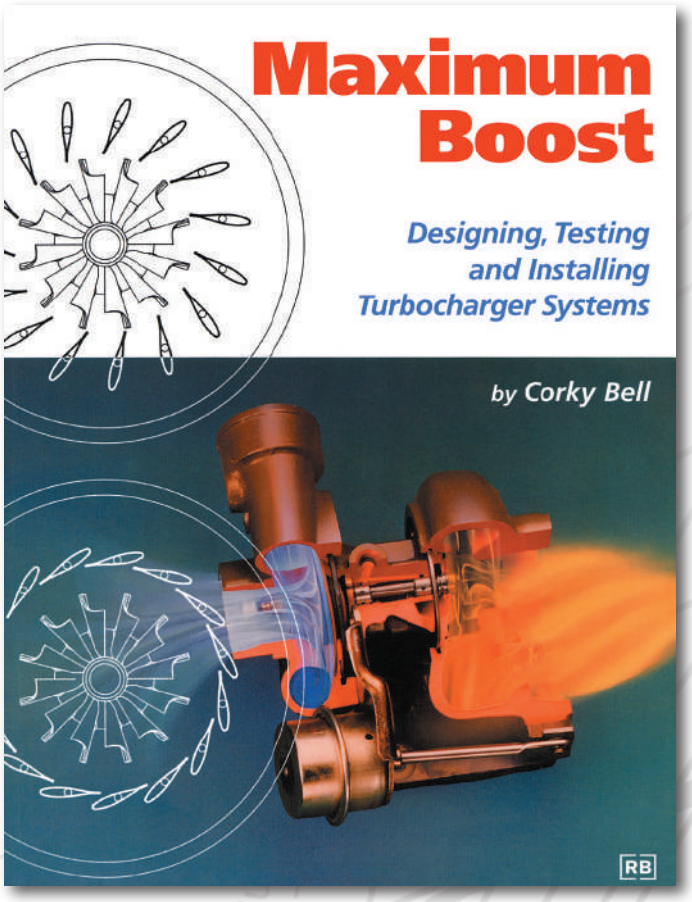

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present difficulties in meeting some of the regulatory requirements on weight and weight distribution. "Hybrid systems come with a significant mass consequence," he says. "To take a car that is carrying that V12 power unit, which comes with a mass trade-off as well, when you do the simulation it becomes let's say a difficult challenge."

The involvement of Newey in the Valkyrie LMH programme, it should be noted, has been played down by Carter.

The designer of a line of F1 world championship-winning chassis for Williams, McLaren and Red Bull joined Aston Martin from Red Bull Racing on March 1 after a period of gardening leave, but has not and will not be involved in the development of the LMH. He is "fully committed to the F1 team", says Carter.

The timeline

Work got underway on the latest version of the Valkyrie racer in March '23. There was a short period of initial systems testing with the AMR Pro early the following year before Aston hit its goal of getting out on track in the summer. The car ran for the first time at Silverstone in early July, first on the Stowe school circuit without bodywork and then a week later on the full grand prix track in completed form.

By the time Aston launched its 2025 race programmes in Hypercar and GTP with the reveal of the liveries of the cars and the drivers in late January, the car had completed more than 15,000 km of testing. That figure continued to rise prior to the car being blooded in competition in Qatar: there was further systems testing in the US and then three days at the official IMSA-sanctioned test at the beginning of February.

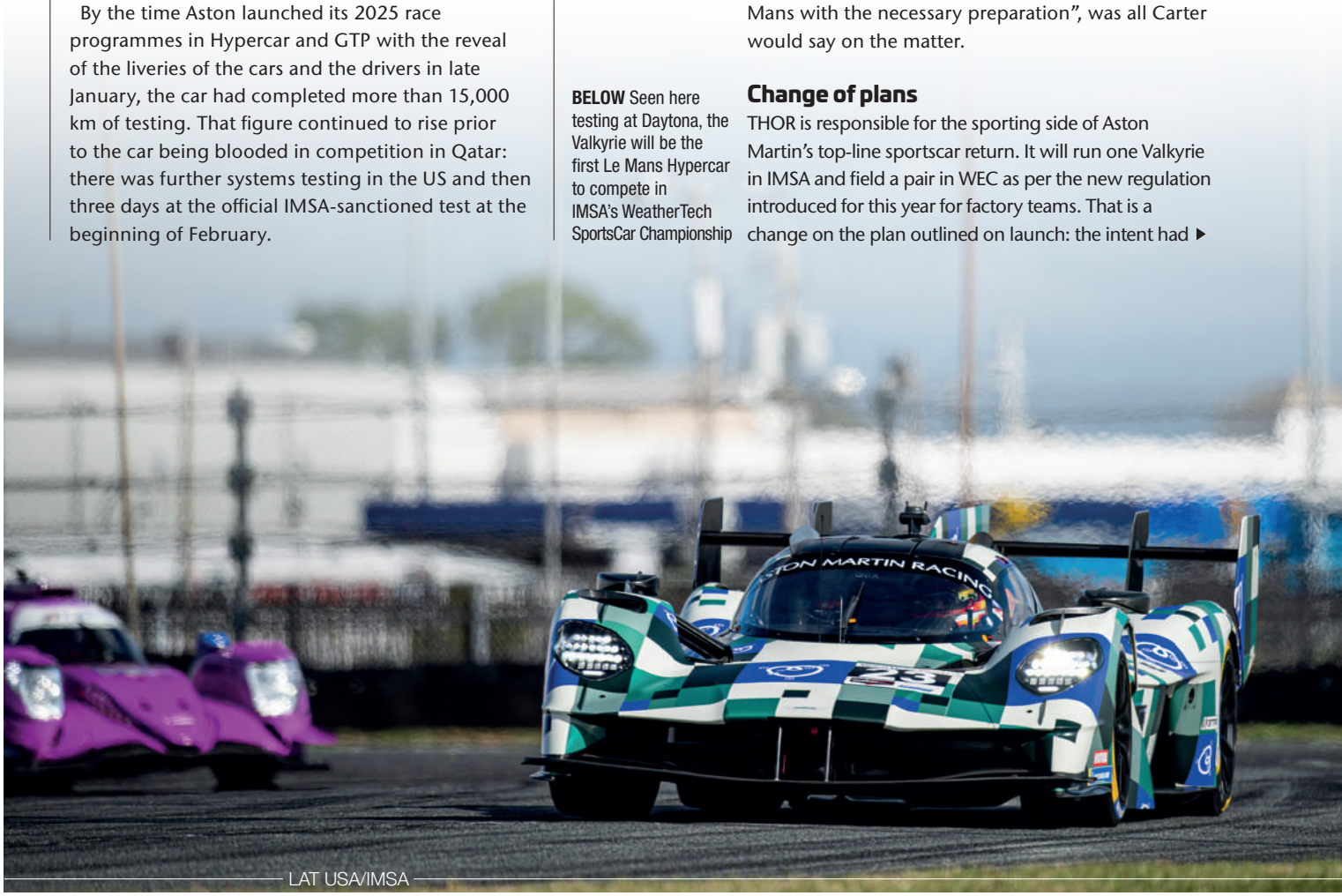
Running was European-based to begin with before a second car came on stream with an outing at Road Atlanta the weekend after the Petit Le Mans IMSA finale in October. The US-based car also ran at Daytona over the winter, while the 'European' chassis decamped to the Middle East and tested in Bahrain after the last round of the WEC and then at the Losail International Circuit in Qatar in December.

> *"In terms of repositioning the car in the performance window, a lot has been done on the underfloor"*

"We have completed sufficient endurance relative to this stage in the programme and we will continue to ascertain the need for further development mileage as the programme evolves," says Carter, who wouldn't be drawn on its plans for Le Mans simulation running. It is known, however, that THOR will stay after the Valkyrie's IMSA debut at the Sebring 12 Hours on 15 March – the intent would appear to be to put another 12 hours or so on the car. "We are approaching the demands of doing Le Mans with the necessary preparation", was all Carter would say on the matter.

Change of plans

THOR is responsible for the sporting side of Aston Martin's top-line sportscar return. It will run one Valkyrie in IMSA and field a pair in WEC as per the new regulation introduced for this year for factory teams. That is a change on the plan outlined on launch: the intent had ▶



BELOW Seen here testing at Daytona, the Valkyrie will be the first Le Mans Hypercar to compete in IMSA's WeatherTech SportsCar Championship

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Cosworth

been to run a solo car in each series in year one.

The requirement for Aston and THOR to double its WEC entry was almost certainly central to the decision to push back its entry from IMSA round one at Daytona in January to the WEC opener. James describes the rule, confirmed at Le Mans last June, as a "curveball".

"Another car involves a lot of things, not just parts but also personnel," he explains. "Don't forget that engines have an eight-month lead time and in year one of a programme gearing up the spares inventory is a huge undertaking. It was definitely a challenge to get it done."

Carter points out that skipping the 24-hour fixture at Daytona bought Aston a lot of time. The Christmas break, he explains, is highly disruptive of the supply chain. "If you were going to Daytona in January, it has quite a consequence on your commitment to go testing and start to build your cars and spares in order to go racing," he says.

What he calls "a refocussing of the programme" was a "significant opportunity" that allowed it to push back the homologation of the Valkyrie. Once homologated, remember, the specification of an LMH is largely set for the lifespan of the car: there is only limited scope for performance upgrades under the so-called 'evo joker' rules.

THOR is headquartered in Phoenix, Arizona and it is from there that the IMSA team will be run rather than the workshops near Orlando in Florida where its GT programmes have been run. It has downscaled its GT Daytona assault from one Pro class and one regular entry to a single car driven by a pro-am line-up, though there was one of each for the season-opening Daytona 24 Hours.

The Florida base was established in double quick time for the start of THOR's 2020 GTD campaign. James points out that the team "didn't own one screwdriver" when it made its decision to go with the Aston Martin

ABOVE The race-optimised Valkyrie runs a modified version of the 6.5-litre naturally aspirated V12 developed by Cosworth for the road car, which in standard form revs to 11,000 rpm and develops over 1,000 bhp

DPPI/WEC

DPPI/FIA/WEC

ABOVE If nobody expected the new Valkyrie to blow the doors off the opposition on its debut, neither did they expect its own doors to be blown off! Replacing a door was just one of the tribulations encountered in Qatar

Vantage GT3 just six weeks prior to its projected debut. The base in Phoenix has been a work in progress over the years since. "We've been building up the location for several years so that we could absorb a programme like this if and when it happened," he explains.

The WEC team will operate out of premises in Brackley down the road from Silverstone next to a Multimatic facility, the one from which it ran the Ford GT WEC programme under the Ford Chip Ganassi Team UK in the latter stages of its three-season GTE Pro programme over the 2016, '17 and '18/19 seasons.

Longtime Multimatic man George-Howard Chappell, who oversaw Aston Martin's GT programmes and latterly its prototype campaigns at Prodrive from 2005 to '11, is heading up the operation. But James is keen to point out that THOR has not parachuted its Valkyries into a Multimatic operation.

"There are four core people from Multimatic and then we have built the team together," he explains. "All the hires have been jointly considered."

The debut

Aston Martin experienced a predictably challenging debut in the Qatar 1812km. The #009 car limped home 23 laps down, after losing time with a door blowing off in the opening hour and a vibration that needed investigation. The sister car retired after 181 laps with a transmission issue.

Aston and THOR weren't expecting to challenge the existing WEC frontrunners straight off the bat. "Reserved" is the word James uses to describe the ambitions for year one. "We want to run reliably and respectably, and then start moving up the grid through the season," he says. "We know that where the performance will be set by the series will put us towards the back of the grid."

That's a reference to how the FIA and the ACO manage the Balance of Performance. They have publicly stated that they will edge newcomers up towards the front, a strategy that was plain to see in 2024 as BMW and Alpine became ever more competitive through the season to the point where they were both able to get onto the podium before its end.

That is James's desire too: "I would love to be able to reach the podium in year one. Is that going to be easy? No, because the competition is stacked. But it is a reasonable goal."

> *"A car that has a blood line back to the road car"*

James suggests that results could be better in IMSA this season, and not only because the GTP field is slimmer – with five other manufacturers rather than the seven in WEC. "If anything, IMSA wants us to be competitive from the beginning," he says. "That is the view they have expressed; that they will do their best to slot us in straight away. Having a LMH in the series for the first time [racing against the LMDhs] is very important and they want to show the other manufacturers that they can bring their LMHs over and be competitive."

There has been the suggestion from rival manufacturers that Aston will have an advantage as it develops the Valkyrie because as a non-hybrid it is a simpler machine than its competitors. One leading figure from an LMH marque has described the hybrid system as "expensive and unreliable ballast". That's a reference to the 190 km/h activation speed for a front-axle kinetic energy recovery system that effectively mitigates the advantages of four-wheel-drive.

Carter suggests that there are "advantages and disadvantages" on both sides. "If we didn't have full trust and belief in the FIA, the ACO and IMSA we wouldn't be partaking," he continues. "That is the great thing about the regulation set: it allows these different technologies to compete on a level playing field." RT

LEFT The underfloor is used to position the car in the right aero window for the Balance of Performance

"CLOSING THE LOOP"

Billed as a "new model" in racing, Honda Racing Corporation US is race engineering one of the ARX-06s it supplies for Meyer Shank Racing's IMSA GTP programme. By **Gary Watkins**

THEY'VE put the band back together. That's how some have billed Meyer Shank Racing's return to the factory Acura fold for this year's IMSA SportsCar Championship. But that's not quite right. Mike Shank's successful sportscar squad – twice an overall winner of the Daytona 24 Hours with Acura and three times in total – never stopped working for the Honda brand during its year out of the series. So perhaps a better description would be that the band is back on tour.

But there's a twist. If you continue the musical analogy, the line-up has been bolstered for MSR's return to the IMSA stage. This time around one of the cars being run out the MSR trailer compound is engineered not by the team, but by the group that developed the car. That's the Honda Racing Corporation USA, the former Honda Performance Development organisation that has masterminded Acura's involvement in top-level sportscar racing in North America and beyond since 2007. That was when it joined the American Le Mans Series with a twin-pronged LMP2 attack with its own car, the ARX-01a developed by Wirth Research in the UK on a Courage LC75 chassis and a Lola B06/40, both powered by HPD's 3.4-litre normally-aspirated V8.

Shank, whose team has been a force in top-line North American sportscar racing since 2004, describes the arrangement as "a new model in ▶

ABOVE HRC US had already developed the technology beneath the bodywork of the ARX-06. Now it is handling the strategy and race engineering for the #93 MSR car too

Levitt/LAT Images

racing". The normal deal is for the team to supply the race engineering staff, the lead engineer and the performance and strategy engineers beneath them. But in the case of the #93 Acura ARX-06 LMDh competing in the full IMSA series this year those team members travel to the races from HRC US HQ in Santa Clarita, California rather than MSR's base in Pataskala to the east of Columbus, Ohio.

Acura back with MSR

The links between MSR, Acura and HRC/HPD run deep. The relationship was engrained long before it became one of the marque's representatives in the top class of the IMSA series in the last year of the Daytona Prototype international era when it ran a single ARX-05. It first teamed up with HPD for the 2015

Photos: Levitt/LAT Images

LEFT HRC US president David Salters insists the project is all about the people

BELOW The strategy work, adapting analysis tools to predict what is going to happen in a race, fits in well with the objectives of the wider Honda company

season when it switched over from running what was officially called a Ford EcoBoost Riley DP, really one of the US constructor's MkXXX powered by a 3.5-litre Ford V6 twin-turbo, to a Ligier JSP2 with Honda's production-based 2.8-litre V6 turbo in the back.

It was season two after the schism in North American sportscar racing came to an end with the merger between the Grand American Road Racing series and the American Le Mans Series. The rational, says Shank, was that "the P2 car was easier to drive and at that time we had a semi-pro driver".

The link-up with HPD quickly expanded: from 2017 it was Acura's official representative in IMSA's GT Daytona class with the NSX GT3. Two championships followed in 2019 and 2020. That segued into a step up to into the DPi ranks for 2021 when Penske Racing and Acura ended the relationship that began on the marque's return to the top flight of US sportscar racing in 2018.

MSR claimed victory in the blue riband Daytona 24 Hours IMSA curtain-raiser with the ARX-05 in 2022 on the way to winning the title with Tom Blomqvist and Oliver Jarvis. It went on to reprise the victory 12 months later on the debut of the ARX-06 LMDh developed out of the ORECA chassis spine. The second Daytona triumph was tainted by controversy, however. More than a month after the race, IMSA announced that the team had been found to have manipulated tyre pressure data during the race – IMSA has live data from sensors to ensure that each car stays within the prescribed limits. Because the result had long since become official, the victory stood, but the car lost 200 championship points and the team was fined US$50,000.

Band breakup

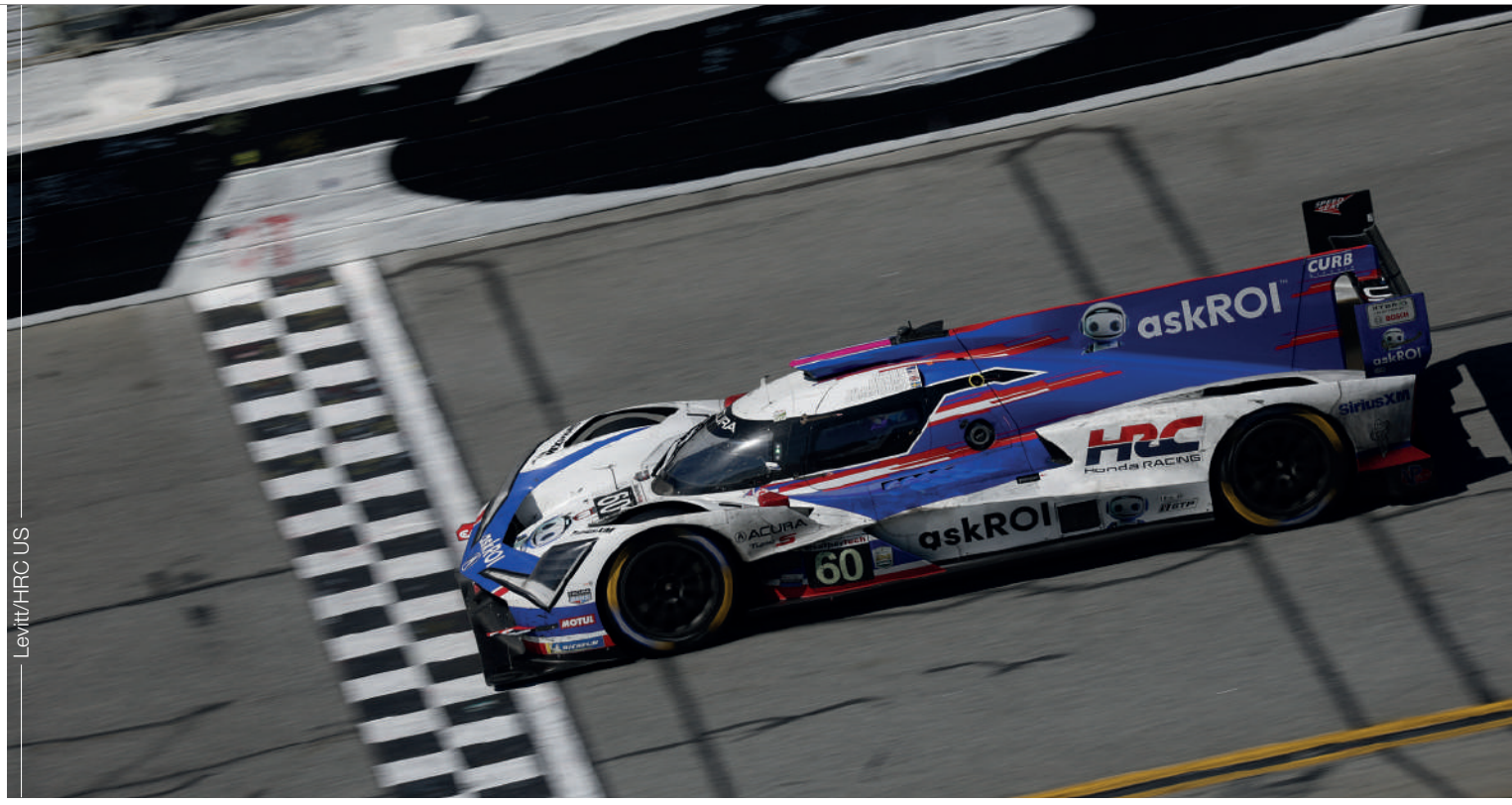
The idea that MSR lost the Acura gig for the following year is a simplistic one. The team was coming to the end of its contract, while Acura's other partner, Wayne Taylor Racing, had a new one in place to expand to two cars for 2024. All Shank will say is that "we had our problems, but we left on good terms". Hence its ongoing relationship that encompassed both its IndyCar operation and what Shank calls "special projects".

> *"Honda and Acura go racing to develop the people and the technology"*

HRC US president David Salters says he doesn't want to go into what he calls "contract stuff". But what is clear is that Acura needed a new partner for its GTP class assault in 2025: WTR was headed back to General Motors to renew the partnership with Cadillac that had yielded three Daytona wins in the first four years of the DPi era.

Shank had made it clear that while he had to sit out the 2024 IMSA season, he would be back. The team described the confirmation that there would be no sportscar racing for it last year as a "pause".

MSR is now a fixture on the IndyCar grid and a winner of the Indy 500 with Helio Castroneves in 2021. It started out with a one-off assault on the 500 in partnership with Andretti Autosport in 2017, subsequently teamed up with Schmidt Peterson Motorsports and then started to run a car in its own right in 2020. It is now fielding two in a full schedule and an extra car at Indianapolis. All with Honda engines, it should be pointed out. But sportscar ▶



Levitt/HRC US

racing has been the team's bread and butter since it joined the Grand American SportsCar Series in 2004 from the Toyota Atlantic Championship. Back then the operation was known as Michael Shank Racing before being renamed in 2018 when Jim Meyer came on board as co-owner.

"It was always the aim to get back, and as soon as possible," explains Shank, who adds that he was close to a deal with a manufacturer he declines to name for 2024. "I kept the team together almost in its entirety – I lost one truck driver. Some guys helped out on the IndyCar programme and some worked on special projects. It was important to keep everyone because as far as I was concerned we were going to be back in this paddock."

Shank liked what he was hearing when HRC started talking about taking on responsibility for the engineering of one of the cars. "Jim and I looked at each other, said, 'You know what, we like that,'" says Shank. "Really good engineers are hard to come by if nothing else, so it took the strain off a bit."

A new deal for HRC

Salters, who moved up to the top job at HPD in December 2020 after six years first as leader of its engine programmes and then technical director following this departure from his position as head of Ferrari's Formula 1 engine department, explains that giving his staff the chance to actually run one of the cars was the obvious next step.

"If we take it back to why we go racing, Honda and Acura go racing to develop its people and its technology, and to promote what you do engineering-wise." he says. "We already do a big chunk of engineering underneath the car and on the aero. We do lap time simulation, we do a lot of optimisation of the set-up of the car before we get to the track: we know how the car behaves before we get to the circuit. So why don't we just close the loop now and run one of the cars? That will give engineers more opportunity, which is my prime responsibility. My job is to look after the people."

There are other benefits, he continues: "The other thing is that it brings the information more directly back into the factory. The fact that you are running the car makes it more immediate. It adds urgency as well to the organisation."

He also stresses that there are potential benefits for road car programmes. "We are a bespoke racing organisation, but we have regular contact with the road car ▶

ABOVE Acura MSR finished on the Daytona podium for the third year in a row, its #60 car missing out on victory by just 1.335 seconds

BELOW The deal also enables Honda to further develop its young driver programme. HRC President Koji Watanabe is seen here with Kaku Ohta, a graduate of the Honda Formula Dream Project, who will contest a further two GTP events after his Daytona breakthrough

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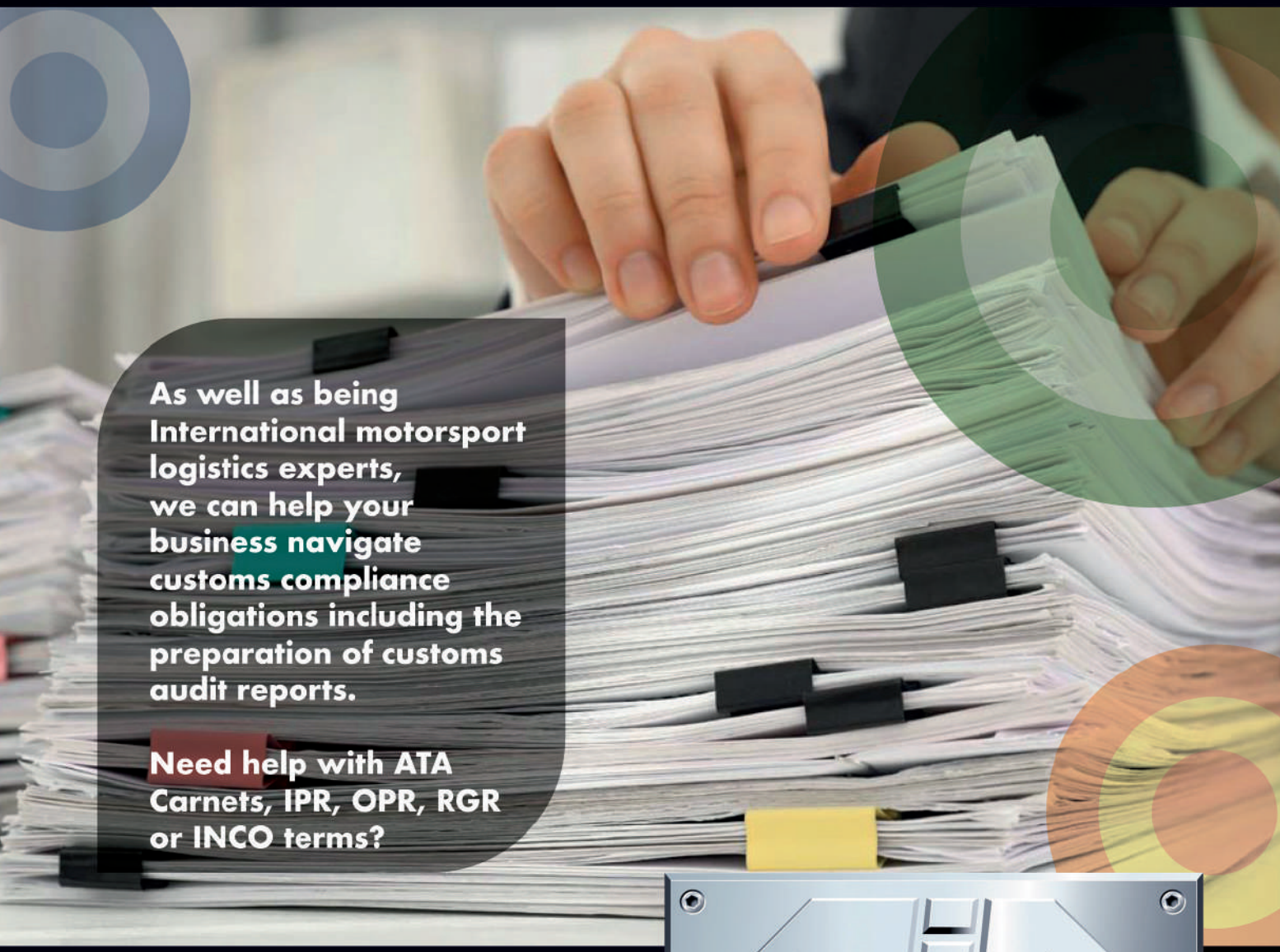

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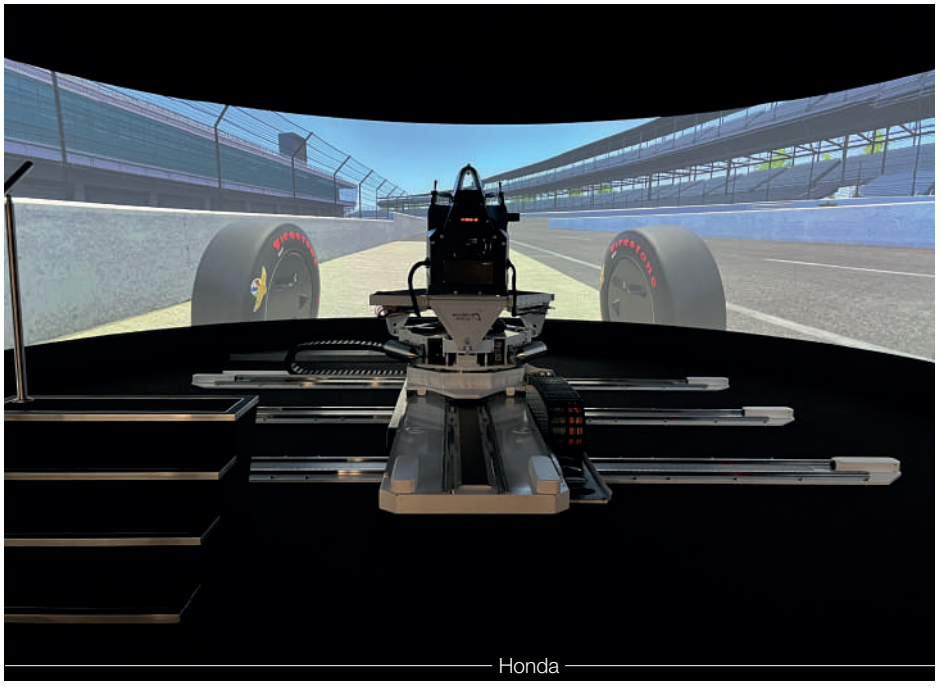
side of Honda – we have a resident Honda engineer who comes from Japan. We have projects where we bring the racing and road car sides together."

He points to a number of special projects undertaken by HRC and Honda – "wacky technical demonstrators" – over the years, including a machine officially known as the CR-V Hybrid Racer but known by Honda as 'The Beast'.

"We took the basis of the CR-V and put the IndyCar powertrain in the car with what was a pre-development hybrid system," explains Salters, who likens it to a Group B rally car in look. "That car was made at the Honda Technical Centre in Ohio."

Salters reckons there's another reason for taking ultimate responsibility for one of the cars out on the racetrack in the cut and thrust of IMSA competition.

"It's fun!" he says. "When it comes down to it the fact that you are running the car and are more involved is just more fun. It is a headache, but it is more of a challenge. The reason why you do any of this is to challenge yourselves. So why wouldn't you want the next step in terms of a challenge."


Honda

BELOW The new alliance tightens the ties between the racetrack and HRC's next generation Driver in the Loop racing simulator, which is capable of generating up to 1.5 MB of data each second

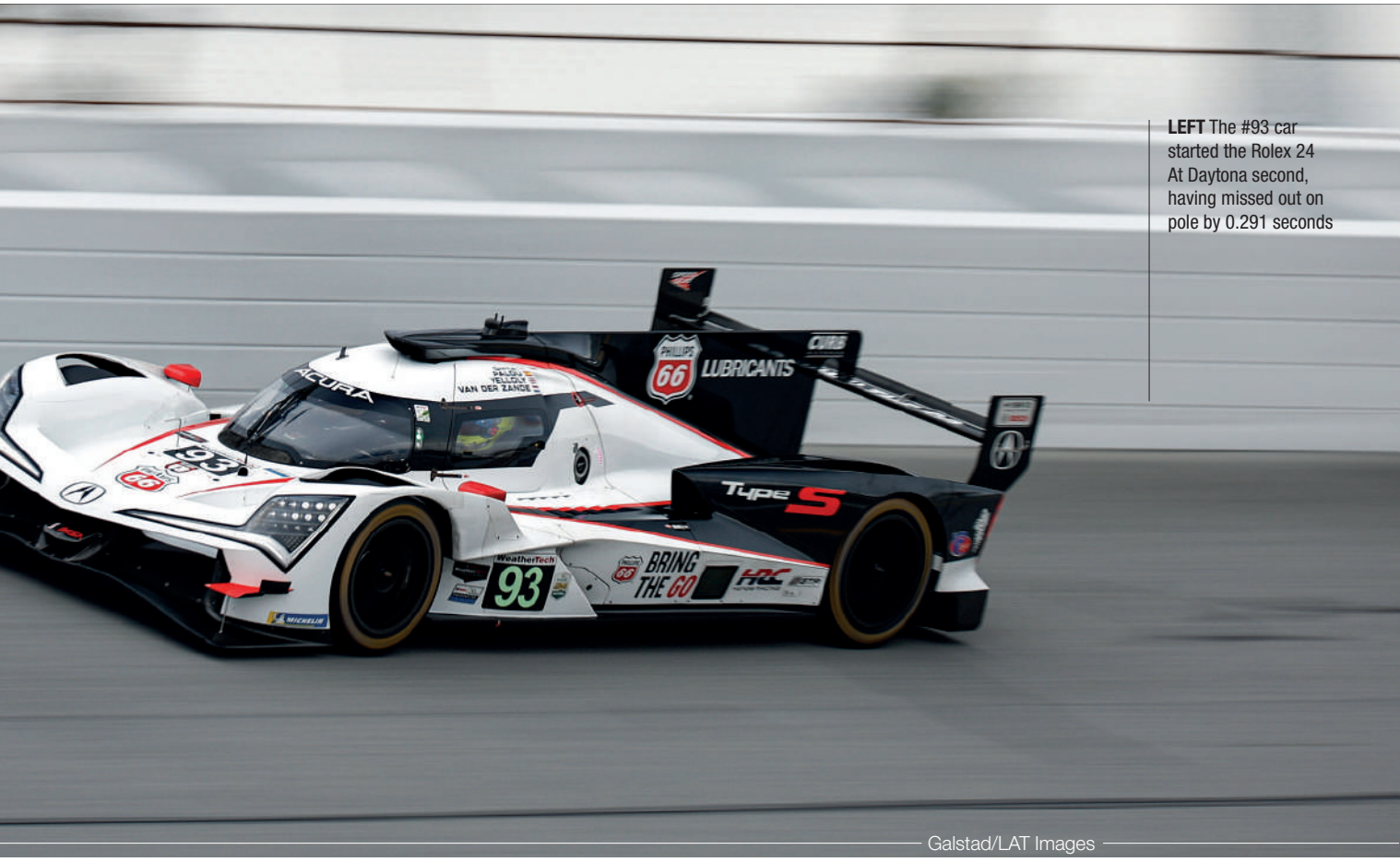
ABOVE The experience gained by running a car at the racetrack brings more immediacy to the operation back at HQ

How does it work?

The fleet of Acura ARX-06s is based at MSR's workshops, though is owned by HRC US; this is a full factory effort remember. The equipment is MSR's and the mechanics running both cars come from the team. What HRC is supplying on the #93 car – the race number tips its hat to the year of HPD's formation – is the engineering team and what Acura calls the 'car team manager'. Stefano Pulcini is the race engineer and leads a small squad of performance engineers and strategists from HRC US. Wayne Gross acts as the #93 car manager.

Pulcini is race engineering for the first time, at least in the real world. Salters goes back to his point about offering HRC staff opportunities and developing their potential. "Stefano was in our vehicle

> *"Stefano worked on the Driver-In-Loop simulator. He was basically race engineering a car, but one that didn't move out of a room!"*



LEFT The #93 car started the Rolex 24 At Daytona second, having missed out on pole by 0.291 seconds

Galstad/LAT Images

performance group and worked on the Driver-In-Loop simulator," he explains, "so he was basically race engineering a car before, but one that didn't move out of a room! It is basically the same challenge: the way the DILs are now these days, it is the car. Typically you will be a performance engineer before becoming a race engineer. That was his next obvious step, so it is nice to be able to give him that opportunity."

Gross, who is in charge of all HRC US's trackside operations, "put on another hat" says Salters at the IMSA races now. As the car manager he is in charge of the rule set, the Information Management systems and managing the drivers. "It was an opportunity for Wayne to get closer to the asphalt: there is a lot of pride in running your own car," adds Salters.

How did it go?

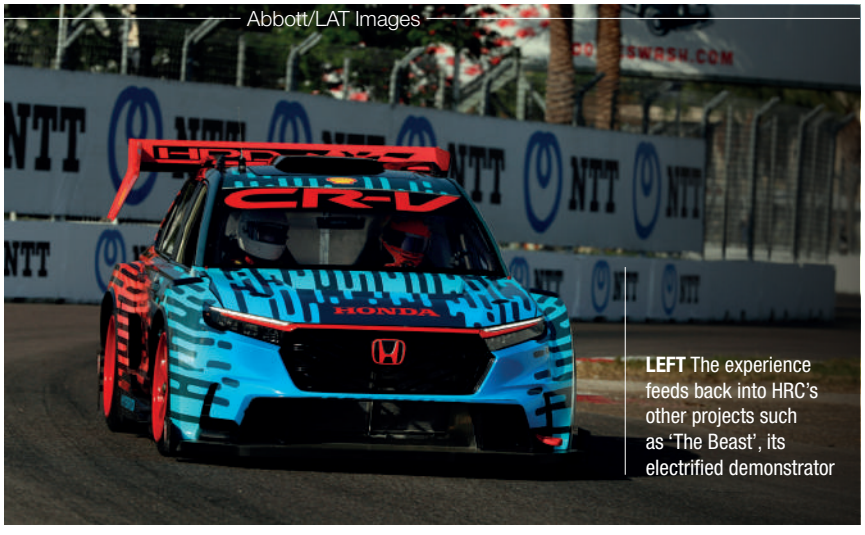
Acura didn't add to its tally of three outright Daytona wins won in consecutive years from 2021, but the best of its ARX-06s made it onto the podium in this year's IMSA curtain-raiser in January. The MSR-engineered #60 finished second with Tom Blomqvist, Colin Braun, Scott Dixon and Felix Rosenqvist, ending up just 1.3sec behind the winning Porsche 963 LMDh run by the Penske team. Not bad for starters, reckons Salters.

"I was very proud that we were in there, elbows out, competing – that's why we do it!" he says. "Disappointed that we didn't win but I am incredibly proud of the men and women, proud that we were competing and on the podium. All in all it was probably a fair result."

Salters and Shank stress that the latest incarnation of the MSR Acura factory operation is still in its infancy, the latter pointing out that the team had got its hands on the first of its ARX-06s only nine weeks ahead of Daytona and that it is now running two prototypes rather than one. "There was a lot to do, because our sportscar operation went from one to two cars," explains Shank. "That meant more people, more equipment – trailers, timing stands and everything."

Salters insists that Acura and MSR are "still building a team" at this early stage of the season. "You've got to be realistic: we have to build a team, we have a lot of work to do. Preparing and racing are two different things. In the heat of the battle everything goes up a notch." RT

Abbott/LAT Images



LEFT The experience feeds back into HRC's other projects such as 'The Beast', its electrified demonstrator

Nissan

CHARGE OF THE *RIGHT* BRIGADE?

Sergio Rinland welcomes the fast-charge developments showcased in Formula E, even if he struggles to see the drama in a 34-second pit stop!

FORMULA E's Jeddah E-Prix marked the debut of 'Pit Boost', with mandatory pit stops to charge the batteries mid-race.

It is an interesting development from the electric vehicle charging point of view. But, as an enhancement to the show, I have my doubts: a 34-second pit stop in racing terms is an eternity.

It does of course present a new strategy planning challenge to the engineers, but the fans will not see that. It may impact the racing a bit in places like Monaco, where in 34 seconds the competitor will drop 10 places during the pit stop and if he is one of the last to stop, will remain there to the end.

From the technical point of view, it is a great development and will improve charging times for some sectors, not all. 600 kW charging is, from what we can get today, a great improvement.

When Porsche was developing the current Taycan (Mission E in those days) it had a target of charging to 80% State of Charge (SoC) in 15 minutes. It achieves that with the latest 350 kW charging stations, so 600 kW will make that charge as fast as petrol refuelling. Job done, look for another excuse not to drive an EV.

ABOVE 'Pit Boost' was conceived to showcase the fast-charge capabilities EV owners can expect in the future

Nevertheless, not all is as rosy as it looks. Charging a battery with high power will raise the temperature inside the cells, increasing the need for cooling and using more energy. But the worst news of all about fast high-power charging is the massive heating in a short period of time will dramatically reduce the battery life, probably to half of what it would be if the battery is treated more gently.

Hence, the application of this latest technological breakthrough of Formula E to road cars is relative. Where it will be applicable is in commercial and big machinery. In fact, Fortescue Zero (formerly Williams Advanced Engineering), which pioneered the development of Pit Boost for Formula E, has been awarded A$10 million in funding from the Australian Renewable Energy Agency (ARENA) to develop a six megawatt fast charger test unit that will be compatible with a wide range of battery electric heavy mining equipment.

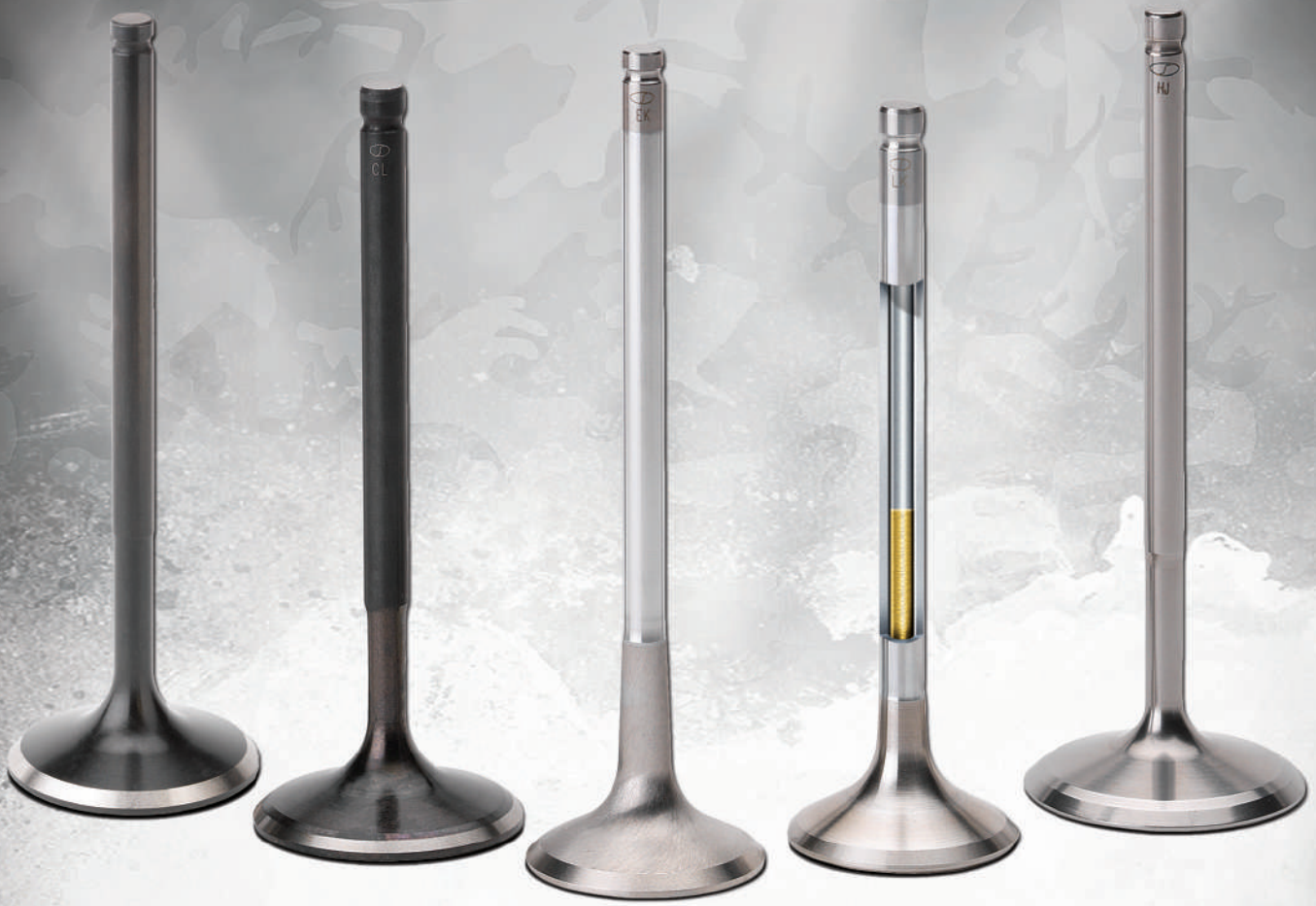
Those monster trucks weigh up to 650 tons fully loaded and need a 3,000 kW (4,000 HP) motor, so if the mining company wants to charge the vehicles overnight, they will need a 600-kW charger or even more to replenish what I estimate will be a 3 to 4 MWh battery.

If we are to decarbonise heavy industries like mining, there is a pressing need for that sort of technology to be deployed as soon as possible, so who better than motorsport to develop high-performance batteries and chargers?

That was a point underlined last month when Mercedes-Benz became the first to commence road testing of a lithium-metal solid-state battery following collaboration between their racetrack and passenger car engineers.

As for Pit Boost's contribution to motorsport and the show? As a racing purist, it adds another external factor to make the races more complex and more exciting for some, not for me.

SUPERTECH



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